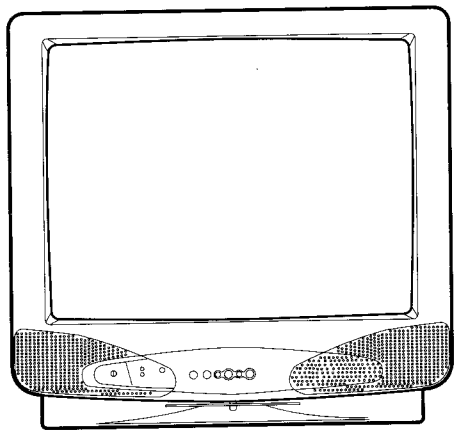
GoldStar

COLOR TV
SERVICE MANUAL

CHASSIS : MC-64A

CAUTION
BEFORE SERVICING THE CHASSIS, READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



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SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and Replacement Parts List.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

General Guidance

An **Isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitary that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1W), keep the resistor 10mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Due to high vacuum and large surface area of picture tube, extreme care should be used in **handling the Picture Tube**. Do not lift the Picture tube by it's Neck.

X-RAY Radiation

Warning:

The source of X-RAY RADIATION in this TV receiver is the High Voltage Section and the Picture Tube.
For continued X-RAY RADIATION protection, the replacement tube must be the same type tube as specified in the Replacement Parts List.

To determine the presence of high voltage, use an accurate high impedance HV meter.

Adjust brightness, color, contrast controls to minimum.
Measure the high voltage.
The meter reading should indicate
23.5 ± 1.5KV: 14-19 inch, 26 ± 1.5KV: 19-21 inch,
29.0 ± 1.5KV: 25-29 inch, 30.0 ± 1.5KV: 32 inch
If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.

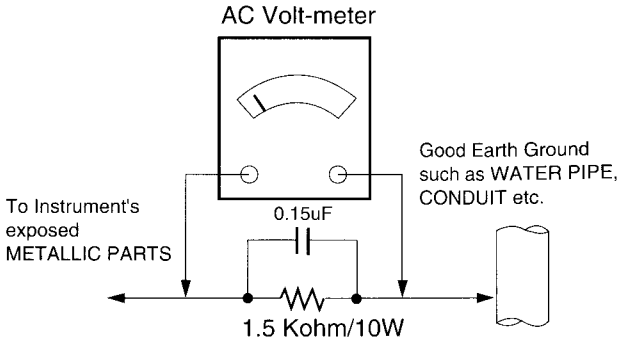
Before returning the receiver to the customer,

always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

Leakage Current Cold Check(Antenna Cold Check)
With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on positioin, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.
If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1MΩ and 5.2MΩ.
When the exposed metal has no return path to the chassis the reading must be infinite.
An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)
Plug the AC cord directly into the AC outlet.
Do not use a line Isolation Transformer during this check.
Connect 1.5K/10watt resistor in parallel with a 0.15uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.
Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.
Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each esposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which is corresponds to 0.5mA.
In case any measurement is out of the limits sepcified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



SERVICING PRECAUTIONS

CAUTION: Before servicing receivers covered by this service manual and its supplements and addenda, read and follow the *SAFETY PRECAUTIONS* on page 3 of this publication.
NOTE: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before;
   a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
   b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
   c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.
      CAUTION: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
   d. Discharging the picture tube anode.
2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe. Do not test high voltage by "drawing an arc".
3. Discharge the picture tube anode only by (a) first connecting one end of an insulated clip lead to the degaussing or kine aquadag grounding system shield at the point where the picture tube socket ground lead is connected, and then (b) touch the other end of the insulated clip lead to the picture tube anode button, using an insulating handle to avoid personal contact with high voltage.
4. Do not spray chemicals on or near this receiver or any of its assemblies.
5. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable nonabrasive applicator; 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength)
   CAUTION: This is a flammable mixture.
   Unless specified otherwise in this service manual, lubrication of contacts in not required.
6. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
7. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
8. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.
   Always remove the test receiver ground lead last.
9. *Use with this receiver only the test fixtures specified in this service manual.*
   CAUTION: Do not connect the test fixture ground strap to any heatsink in this receiver.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called *Electrostatically Sensitive (ES) Devices.* Examples of typical ES devices are integrated circuits and some fieldeffect transistors and semicounductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficent to demage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a repalcement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the ieads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the bruching together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintan tip temperature within the range or 500° F to 600° F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thorohly clean the surfaces to be soldered. Use a mall wirebristle (0.5 inch, or 1.25cm) brush with a metal handle. Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique
   a. Allow the soldering iron tip to reach normal temperature. (500° F to 600° F)
   b. Heat the component lead until the solder melts.
   c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
      CAUTION: Work quickly to avoid overheating the circuiboard printed foil.
6. Use the following soldering technique.
   a. Allow the soldering iron tip to reach a normal temperature (500° F to 600° F)
   b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.

c. Qulckly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.
CAUTION: Work quickly to avoid overheating the circuit board printed foil.

d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

IC Remove/Replacement

Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in parapraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit boare.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas).

"Small-Signal" Discrete Transistor Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact then solder each connection.

Power Output, Transistor Device Removal/Replacement

1. Heat and remove all solder from around the transistor leads.
2. Remove the heatsink mounting screw (if so equipped).
3. Carefully remove the transistor from the heat sink of the circuit board.
4. Insert new transistor in the circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heatsink.

Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicula y to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and if necessary, apply additional solder.

Fuse and Conventional Resistor Removal/Replacement

1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.
3. Solder the connections.
CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board causing the foil to separate from or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

At IC Connections

To repair a defective copper pattern at IC connections use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary).
2. carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.

At Other Connections

Use the following technique to repair the defective copper pattern at connections other than IC Pins. This technique involoves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side. Carefully crimp and solder the connections.
CAUTION: Be sure the insulated jumper wire is dressed so the it does not touch components or sharp edges.

SPECIFICATIONS

Note:Specifications and others are subject to change without notice for improvement.

- **Power requirement:**
  AC 100-270V, 50/60Hz (Cold SMPS)
- **Tuning system:**
  VS (Voltage Synthesizer), 80 program memory
- **Sound output:**
  14"-21" ; 2.5W Typ.: 5.0W Max, at 50KHz Deviation
  * 10Wmax. X 2way: Equipped Sound Amp Model
- **Control buttons on the TV:**
  Menu, OK, Vol+, Vol-, Pr+, Pr-
- **Intermediate Frequency (IF):**
  Vision IF ; 38.0MHz
  Color IF ; 33.57MHz(PAL)
  34.42MHz(NTSC)
  Sound IF ; 32.5MHz (B/G)
  32.0MHz(I, I/I)
  31.5MHz(D/K, K1)
  33.5MHz(M)
- **Power consumption :**
  14": 70W(80W), 16": 75W(85W), 20": 80W(90W), 21": 85W(95W)
  * ( ): Uesd Sound Amp Board.
- **Antenna input impedance :**
  VHF/UHF 75ohm , Unbalanced type
- **Voice coil impedance:**
  8ohm
- **OSD (On Screen Display) :**
  Menu method
  OSD Language option; English/others language or English only
- **External in/output: SCART or Phone Jack : Option**
  Audio-In ; 0.5Vrms±3dB, over 10Kohm
  Audio-Out ; 0.5Vrms±3dB, below 1Kohm
  Video-In/Out ; 1Vp-p±3dB, 75ohm
  R.G.B In ; 0.7Vp-p±3dB
- **Function:**
  Teletext(TOP/FLOF/LIST) ┐
  UBB(Ultra Bass Booster) │ Option
  CATV/Hyper band │
  Karaoke ┘
  Tetris Game
  Auto Program
  Manual Program
  Auto Sleep
  Quick view
  Recall
  ACMS(Auto channel Memory System)-α(ALPHA)
  PSM(Picture Status memory)
- **Child Lock:**
  In the Lock on state the TV can only be operated by the Remote controller.
  If any button on the front panel is pressed, "CHILD LOCK ON" is displayed on the screen but the button's function is not performed.
  To cancel of this mode, select lock off with menu button on Remote control only.

- **Receiving System**

No	Model No. / System	CF- RF3.58	CF-	CT- RF3.58	CT-	CA- RF3.58	CA-	CY- RF3.58	CY-	CD- RF3.58	CD-
1	PAL-B	O	O	O	O	O	O	X	X	O	O
2	PAL-G	O	O	O	O	O	O	X	X	O	O
3	PAL-I, I/I	O	O	X	X	X	X	O	O	O	O
4	PAL-D	O	O	X	X	X	X	X	X	O	O
5	PAL-K	O	O	X	X	X	X	X	X	O	O
6	SECAM-B	O	O	O	O	X	X	X	X	X	X
7	SECAM-G	O	O	O	O	X	X	X	X	X	X
8	SECAM-D	O	O	X	X	X	X	X	X	X	X
9	SECAM-K	O	O	X	X	X	X	X	X	X	X
10	SECAM-K1	O	O	X	X	X	X	X	X	X	X
11	SECAM-I (6.0)	O	O	X	X	X	X	X	X	X	X
12	SECAM-L (AV)	O	O	O	O	X	X	X	X	X	X
13	NTSC-3.58/4.5	O	X	O	X	O	X	X	X	O	X
14	NTSC-3.58/5.5	O	O	O	O	O	O	X	X	O	O
15	NTSC-3.58/6.0	O	O	X	X	X	X	O	O	O	O
16	NTSC-3.58/6.5	O	O	X	X	X	X	X	X	O	O
17	NTSC-3.58/4.5(50)	O	X	O	X	O	X	O	X	O	X
18	NTSC-4.43/5.5	O	O	O	O	O	O	X	X	O	O
19	NTSC-4.43/6.0	O	O	X	X	X	X	O	O	O	O
20	NTSC-4.43/6.5	O	O	X	X	X	X	X	X	O	O
21	PAL 5.5/60Hz	O	O	O	O	O	O	X	X	O	O
22	PAL 6.0/60Hz	O	O	X	X	X	X	O	O	O	O
23	PAL 6.5/60Hz	O	O	X	X	X	X	X	X	O	O
24	SECAM 5.5/60Hz	O	O	O	O	X	X	X	X	X	X
25	SECAM 6.0/60Hz	O	O	X	X	X	X	X	X	X	X
26	SECAM 6.5/60Hz	O	O	X	X	X	X	X	X	X	X
TOTAL SYSTEM		26	24	11	9	7	5	5	4	16	14

Table 1 : **Receiving System (26 System)**

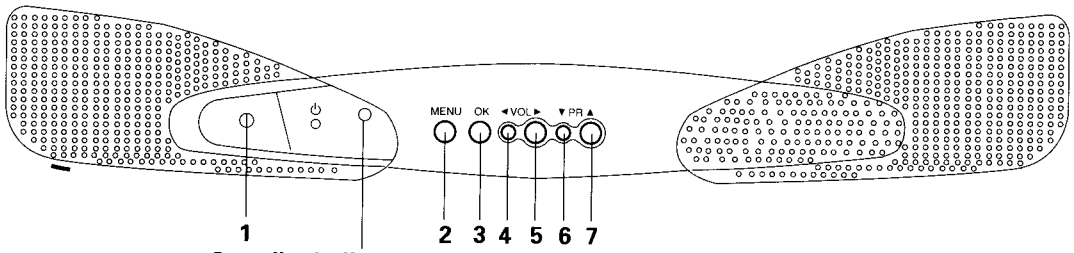
No	Receiving System	Function	Receiving Channel
1	**PAL-B**	Reception of broadcast and play-back for Video Tape Recorder	**VHF Band** PAL/SECAM-B : **2-12** PAL/SECAM-D : **1-12** SECAM-K1 : **2-9** NTSC-M (US) : **2-13** NTSC-M (JAPAN) : **1-12** **UHF Band** PAL/SECAM-G : **21-69** PAL-I : **21-69** SECAM-K : **21-69** PAL-K : **13-56** NTSC-M (US) : **14-78** NTSC-M (JAPAN) : **13-62**
2	**PAL-G**		
3	**PAL-I, I/I**		
4	**PAL-D**		
5	**PAL-K**		
6	**SECAM-B**		
7	**SECAM-G**		
8	**SECAM-D**		
9	**SECAM-K**		
10	**SECAM-K1**		
11	**NTSC-M**		
12	NTSC 4.43/5.5MHZ	Play-back for special Video Tape Recorder	
13	NTSC 4.43/6.0MHZ		
14	NTSC 4.43/6.5MHZ		
15	SECAM-I (6.0MHZ)		
16	SECAM-L (Video In)		
17	NTSC 3.58/4.5MHZ/50HZ	Play-back for special Video Tape/Video disk player	
18	PAL 5.5MHZ/60HZ		
19	PAL 6.0MHZ/60HZ		
20	PAL 6.5MHZ/60HZ		
21	SECAM 5.5MHZ/60HZ		
22	SECAM 6.0MHZ/60HZ		
23	SECAM 6.5MHZ/60HZ		
24	NTSC 3.58/5.5MHZ	Play-back for special Video Tape Recorder	
25	NTSC 3.58/6.0MHZ		
26	NTSC 3.58/6.5MHZ		

NOTE : CF/CT/CA/CY/CD - ****L - - FOR NTSC RF3.58, TELETEXT AND KARAOKE MODEL.
CF/CT/CA/CY/CD - ****R - - FOR NTSC RF3.58 MODEL.
CF/CT/CA/CY/CD - ****X - - FOR TELETEXT MODEL.
CF/CT/CA/CY/CD - ****K - - FOR KARAOKE MODEL.

CONTROL DESCRIPTIONS

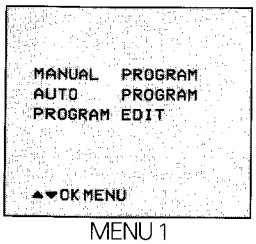
- **Control locations on the TV**

NOTE: The feature may be different in accordance with the tool.

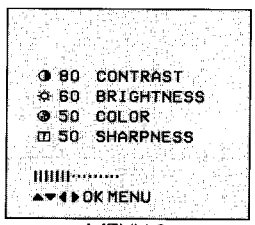


No.	The name of button	Descriptions
1	MAIN POWER	switches the set on or off.
2	MENU	selects a menu ※Refer to the menu reference below.
3	OK	accepts your selection or displays the current mode.
4	VOLUME DOWN	adjusts the volume.
5	VOLUME UP	adjusts menu settings.
6	PROGRAM No. DOWN	switches the set on from standby.
7	PROGRAM No. UP	selects a program or a menu item.

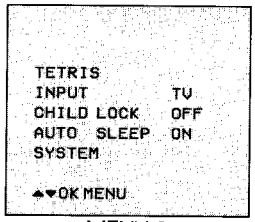
※ MENU REFERENCE



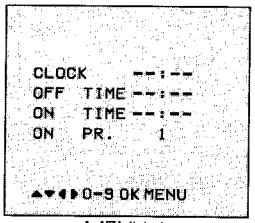
MENU 1



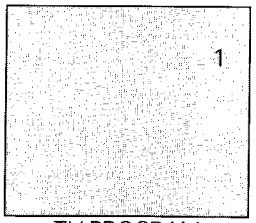
MENU 2



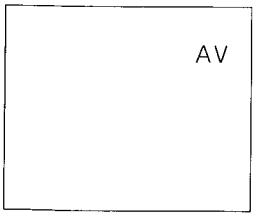
MENU 3



MENU 4



TV PROGRAM



OSD" AV"

Menu selection

1. Repeatedly press the **MENU** button to display each menu.
2. Press the ▲/▼ button to select a menu item.
   The selected menu item changes from green to purple.
3. Press the ◄/► button to change the setting of a menu item or **OK** button to display the sub menu.
4. The menus automatically disappear in about 12 seconds if you do not press a button.
5. In the AV mode, MENU 1 is not displayed.
6. In the teletext mode, MENUs are not displayed
7. In some models, the menu item **LANGUAGE** is also displayed on the screen in MENU 3.

NOTE: On screen language selection(option)

1. Repeatedly press the **MENU** button to select MENU3.
2. Press the ▲/▼ button to select **LANGUAGE**.
3. Press the **OK** button to display the sub menu.
4. Press the ▲/▼ button to select the desired language.
   All the on screen displays will appear in the selected language.
5. Press the **MENU** button repeatedly or **TV/AV** button once to return to normal TV viewing.

DISASSEMBLY INSTRUCTIONS

Important note
This set is disconnected from the power supply through the converter transformer. An isolating transformer is necessary for service operations on the primary side of the converter transformer.

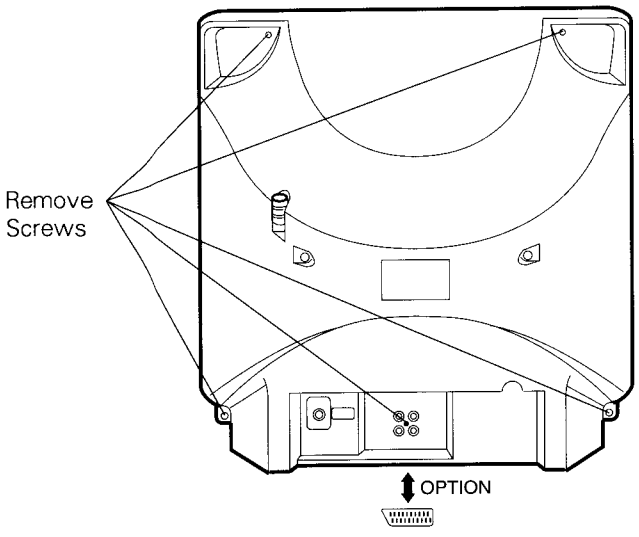
Back Cabinet Removal
Remove the screws residing on the back cabinet and carefully separate the back cabinet from the front cabinet.

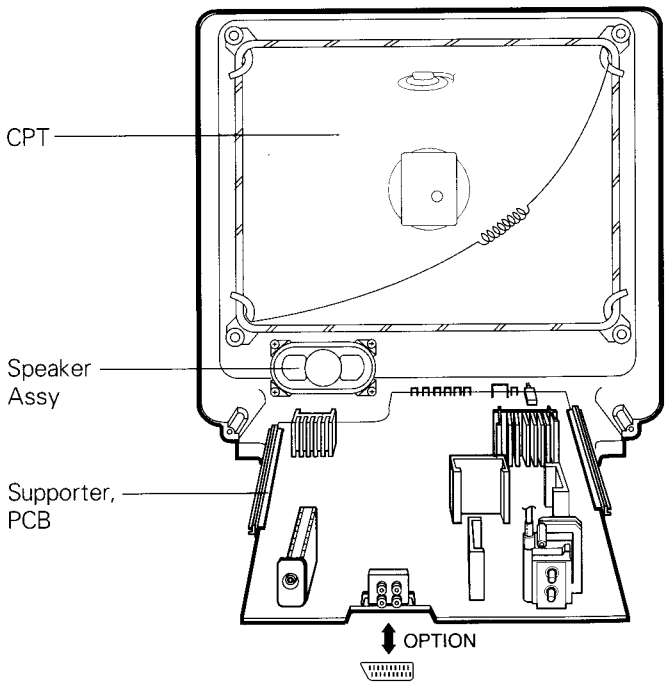
CPT Removal
1. Pull out the CPT board from the CPT neck.
2. Place the front cabinet on soft material not to mar the front surface or damage control knobs.
3. Remove 4 screws securing the picture tube mounting brackets to the front cabinet.
4. Carefully separate CPT from the front cabinet.

Main Chassis Removal
Grasp both side of the main PCB and pull it backward smoothly.

Speaker Assy Removal
1. Remove P601 connector between the speaker and the main chassis.
2. Remove 4 screws holding speaker to the front cabinet.

PICTURE TUBE HANDLING CAUTION
Due to high vacuum and large surface area of picture tube, great care must be exercised when handling picture tube. Always lift picture tube by grasping it firmly around faceplate.
NEVER LIFT TUBE BY ITS NECK! The picture tube must not be scratched or subjected to excessive pressure as fracture of glass may result in an implosion of considerable violence which can cause personal injury or property damage.





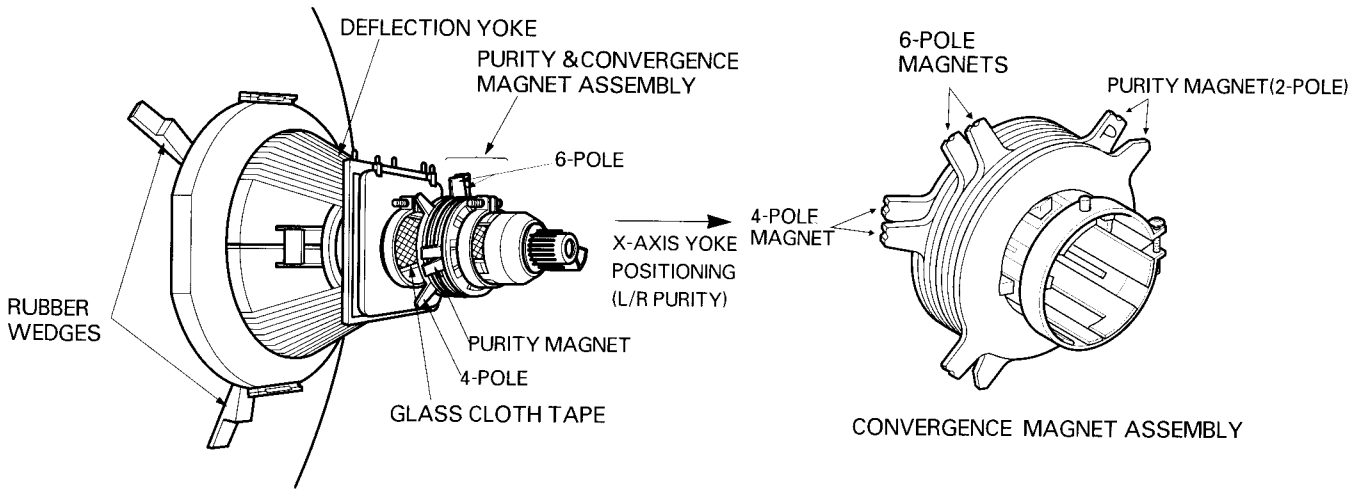
PURITY & CONVERGENCE ADJUSTMENT

Caution:

Convergence and Purity have been factory aligned. Do not attempt to tamper with these alignments.
However, the effects of adjacent receiver components, or replacement of picture tube or deflection yoke may require the need to readjust purity any convergence.

5. Reconnect the internal degaussing coil.

6. Position the beam bender locking rings at the 9 o'clock position and the other three pairs of tabs (2,4 and 6 pole magnets) at the 12 o'clock position.



• Purity Adjustment

This procedure DOES NOT apply to bonded yoke and picture tube assemblies.
The instrument should be at room temperature (60 degrees F or above) for six (6) hours and be operating at low beam current (dark background) for approximately 20 to 30 minutes before performing purity adjustments.

CAUTION: Do not remove any trim magnets that may be attached to the bell of the picture tube.

1. Remove the AC power and disconnect the internal degaussing coil.

2. Remove the yoke from the neck of the picture tube.

3. If the yoke has the tape version beam bender, remove it and replace it with a adjustable type beam bender (follow the instructions provided with the new beam bender)

4. Replace the yoke on the picture tube neck, temporarily remove the three (3) rubber wedges from the bell of the picture tube and then slide the yoke completely forward.

7. Perform the following steps, in the order given, to prepare the receiver for the purity adjustment procedure.

   a. Face the receiver in the "magnetic north" direction.

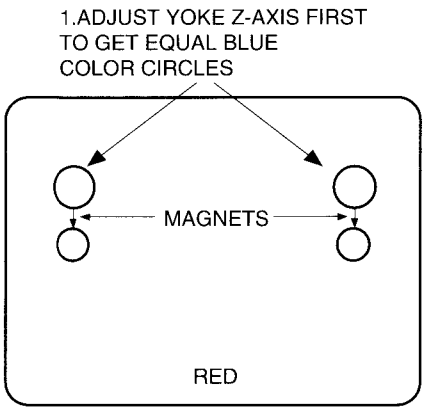
   b. Externally degauss the receiver screen with the television power turned off.

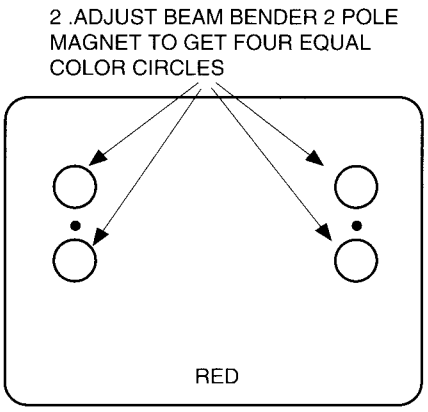
   c. Turn the television on for approximately 10 seconds to perform internal degaussing and then turn the TV off.

   d. Unplug the internal degaussing coil. This allows the thermistor to cool down while you are performing the purity adjustment. DO NOT MOVE THE RECEIVER FROM ITS "MAGNETIC NORTH" POSITION.

   e. Turn the receiver on and obtain a red raster by increasing the red bias control (CW) and decreasing the bias controls for the remaining two colors (CCW).

   f. Attach two round magnets on the picture tube screen at 3 o'clock and 9 o'clock positions, approximately one (1) inch from the edge of the mask (use double-sided tape).





8. Referring to above, perform the following two steps:
   a. Adjust the yoke Z-axis to obtain equal blue circles.
   b. Adjust the appropriate beam bender tabs to obtain correct purity (four equal circles).

9. After correct purity is set, tighten the yoke clamp screw and remove the two screen magnets.

10. Remove the AC power and rotate the receiver 180 degrees (facing "magnetic south").

11. Reconnect the internal degaussing coil.

12. Turn the receiver on for 10 seconds (make sure the receiver came on) to perform internal degaussing, and then turn the receiver off.

13. Unplug the internal degaussing coil.

14. Turn on the receiver and check the purity by holding one (1) round magnet at the 3 o'clock and a second round magnet at 9 o'clock position. If purity is not satisfactory, repeat steps 8 through 14.

15. Turn off the receiver and reconnect the internal degaussing coil.

● Convergence Adjustment

Caution: This procedure DOES NOT apply to bonded yoke and picture tube assemblies.
Do not use screen magnets during this adjustment procedure. Use of screen magnets will cause an incorrect display.

1. Remove AC power and disconnect the internal degaussing coil.

2. Apply AC Power and set the brightness to the Picture Reset condition. Set the Color control to minimum.

3. Apply 8V to the pin42 of IC501.

4. Adjust the Red, Green and Blue Bias controls to get a dim white line.

5. Remove the AC power and 8V from the pin42 of IC501.

6. Reconnect the internal degaussing coil and apply AC power.

7. Turn the receiver on for 10 seconds to perform internal degaussing and then turn the receiver off again.

8. Unplug the internal degaussing-coil.

9. Turn on the receiver, connect a signal generator to the VHF antenna terminal and apply a crosshatch signal.

Caution: During the convergence adjustment procedure, be very careful not to disturb the purity adjustment tabs are accidentally move, purity should be confirmed before proceeding with the convergence adjustments.

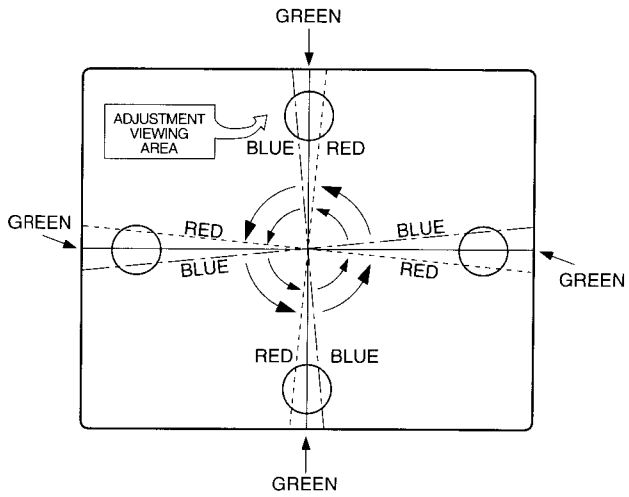
Note: Make sure the focus is set correctly on this instrument before proceeding with the following adjustment.

10. Converge the red and blue vertical lines to the green vertical line at the center of the screen by performing the following steps (below TABLE).
    a. Carefully rotate both tabs of the 4-pole ring magnet simultaneously in opposite directions from the 12 o'clock position to converge the red and blue vertical lines.
    b. Carefully rotate both tabs of the 6-pole ring magnet simultaneously in opposite directions form the 12 o'clock position to converge the red and blue (now purple) vertical lines with the green vertical line.

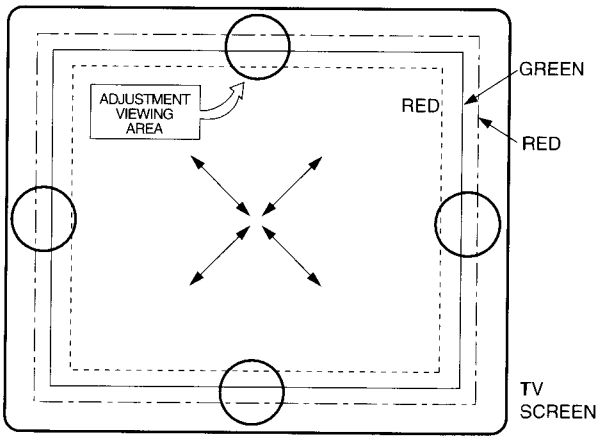
11. Converge the red and blue horizontal with the green line at the center of the screen by performing the following steps. (below TABLE)
    a. Carefully rotate both tabs of the 4-pole ring magnet simultaneously in the same direction (keep the spacing between the two tabs the same) to converge the red and blue horizontal lines.
    b. Carefully rotate both tabs of the 6-pole ring magnet simultaneously in same direction (keep the spacing between the two tabs the same) to converge the red and blue (now purple) horizontal lines with the green horizontal line.
    c. Secure the tabs previsouly adjusted by locking them in place with the locking tabs on the beam bender.

RING PAIRS	ROTATION DIRECTION OF BOTH TABS	MOVEMENT OF RED AND BLUE BEAMS
4 POLE	OPPOSITE	B R OR B R
	SAME	B R OR B R
6 POLE	OPPOSITE	B R OR B R
	SAME	B R OR B R

UP/DOWN ROCKING OF THE YOKE CAUSES OPPOSITE ROTATION OF RED AND BLUE RASTERS



LEFT/RIGHT ROCKING OF THE YOKE CAUSES OPPOSITE SIZE CHANGE OF THE RED AND BLUE RASTERS



12. While watching the 6 o'clock positions on the screen, rock the front of the yoke in a vertical (up/down) direction to converge the red and blue vertical lines. (Fig upper left)
13. Temporarily place a rubber wedge at the 12 o'clock position to hold the vertical position or the yoke.
14. Check the 3 o'clock and 9 o'clock areas to confirm that the red and blue horizontal lines are converged.
    If the lines are not converged, slightly offset the vertical tilt of the yoke (move the rubber wedge if necessary) to equally balance the convergence error of the horizontal lines at 3 o'clock and 9 o'clock and the vertical lines at 6 o'clock and 12 o'clock.
15. Place a 1.5 inch piece of glass tape over the rubber foot at the rear of the 12 o'clock wedge.
16. While watching the 6 o'clock and 12 o'clock areas of the screen, rock the front of the yoke in the horizontal (left to right) motion to converge the red and blue horizontal lines. (Fig. upper right)
17. Temporarily place a rubber wedge at the 5 o'clock and 7 o'clock positions to hold the horizontal position of the yoke.
18. Check the 3 o'clock and 9 o'clock areas to confirm that the red and blue vertical lines are converged. If the lines are not converged, slightly offset the horizontal tilt of the yoke (move the temporary rubber wedges if necessary) to equally balance the convergence error of the horizontal lines at 6 o'clock and 12 o'clock and the vertical lines at 3 o'clock and 9 o'clock.
19. Using a round magnet confirm purity at the center, right and left sides and corners. See Purity Adjustment Procedure.
20. Reconfirm convergence and apply a 1.5 inch piece of glass tape over the rubber foot at the rear of the 5 o'clock and the 7 o'clock wedges.

Adjusting the **VR501(RF AGC)** control to one end of rotation will usually cause a relatively poor signal to noise ratio;
Adjusting to the other end of rotation will usually cause a degradation of over load capabilities resulting on color beats or adjacent channel interference.
For the best results, adjust **VR501** contol while performing on all other local channels, or **Refer to the following Table 1.**

Tuner P/N	Maker	Adjustment Voltage	REMARK
113-118C/D/F	LG-ALPS	5.7±0.1Vdc	RF 60±1dBuV
113-238H	LG-ALPS	6.0±0.1Vdc	RF 60±1dBuV
6700VMV001A	SANYO	4.9±0.1Vdc	RF 60±1dBuV

<Table 1>

● Vertical Height, Center Adjustment

Test Point : **Observeing display**

Adjust : **VR301 (Vertical Height)**
VR302 (Vertical Center)

1) Tune the TV set to receive a digital test pattern.
2) Set standard picture mode(contrast: 80, bright :60, color: 50).
3) Adjust the Vertical height control **(VR301)** so that the circle of a digital test pattern may be located within the effective screen of the CPT.
4) Adjust the Vertical center control **(VR302)** for obtaining geometric center of valuable display vertically.

● Focus Adjustment

NOTE: This adjustment should be performed after warming up for 10 minutes.

Test Point : **Observing display**

Adjust : **Focus control of FBT**

1) Tune the TV set to receive a digital test pattern.
2) Adjust the Focus control for the best overall focus.

● Horizontal Center Adjustment

Test Point : **Observing display**

Adjust : **VR502**

1) Tune the TV set to receive a PAL digital pattern.
2) Adjust the Horizontal center control **(VR502)** for obtaining geometric center of valubale display horizontally.

● Screen & White Balance (color temperature) Adjustment

NOTE: 1. This adjustment should be performed after warming up for 20 minutes.
2. The color bias controls (VR901, VR902, VR903) affect the low light (dark) area of the picture while the color drive controls (VR904, VR905) affect the high light (white) areas.

1) Set all the controls (VR901-VR905) on CPT Board to geometric center position.
2) Set the standard mode (contrast : 80, bright : 60, color : 50).
3) Set the AV mode, adjust and set the screen volume of FBT at just cut-off position(No AV input signal).
4) Set the TV mode, tune the TV set to receive white pattern.
5) By using color analyzer (white balance checker), adjust X position equals to 281±8 and Y position equals to 288 ±8, it means that color temperature is 10000±800°K at low light (4.5ft · L) and high light (over 45ft · L).

ADJUSTMENT INSTRUCTIONS

• Safety precautions

1. It is safe to adjust after using insulating transformer between the power supply line and chassis input to prevent the risk of electric shock and protect the instrument.
2. Never disconnect leads while the TV receiver is on.
3. Don't short any portion of circuits while power is on.
4. The adjustment must be done by the correct appliances. But this is changeable in view of productivity.
5. Unless otherwise noted, set the line voltage to 220Vac± 20%, 50/60Hz.

• Test Equipment required

1. Sweep Generator
2. Marker Generator(38.0MHz: Picture/32.5MHz: Sound)
3. Alignment Scope(5121A)
4. Pattern Generator(PAL/SECAM)
5. DC Power Supply
6. Color analyzer
7. Multimeter(Volt meter)

Preparation for VCO Adjustment

1. Connect the measuring equipment to the TV as shown in Fig. 1
2. Set RF output level of Sweep Generator to 90dBuV.

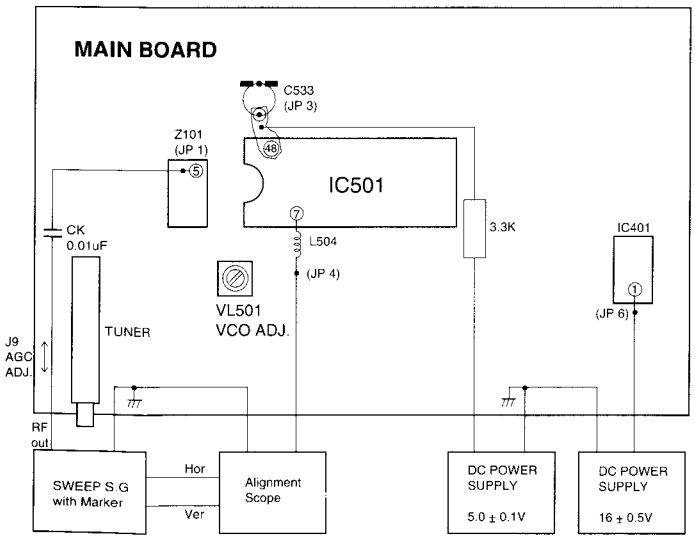


Fig. 1: Connection Diagram of Equipment for VCO Adjustment

• VCO (Voltage Controlled Oscillator) Adjustment

Test Point	: **JP4(L504)**
Adjust	: **VL501**

1) Turn on DC power supplies.
2) Adjust VCO ADJ. coil **(VL501)** so that the level of Picture Carrier (PC) may be at the lowest position as shown Fig. 2.

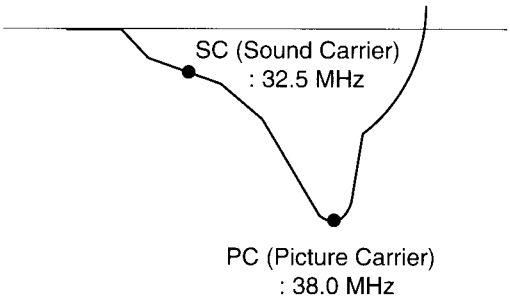


Fig. 2: Output waveform on Alignment Scope

NOTE: When performing this adjustment, if there are 2 adjusted point in VL501, select the lower core position.

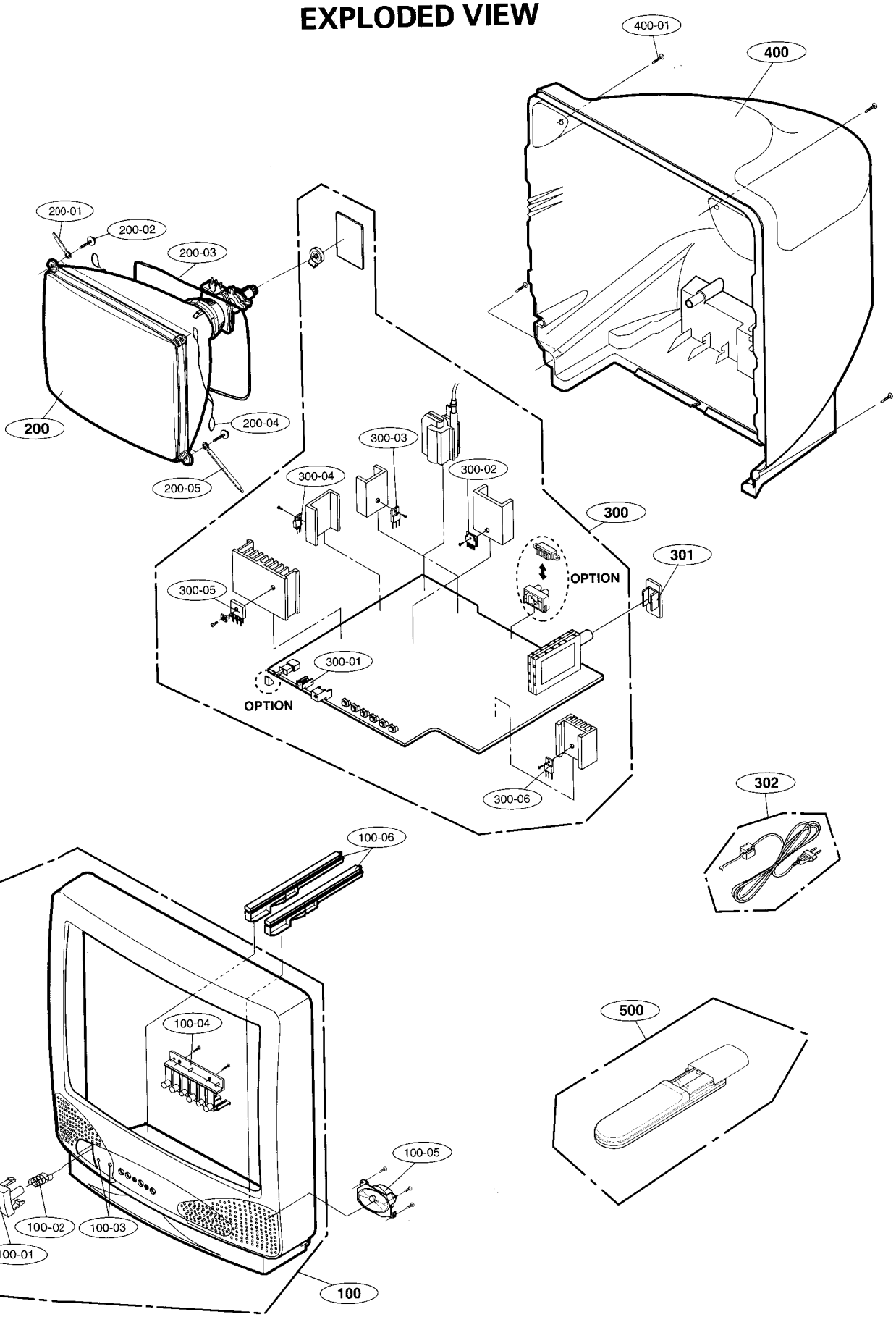
• RF AGC (Auto Gain Control) Adjustment

Test Point	: **J9(AGC ADJ.) or Observing Display**
Adjust	: **VR501**

The RF AGC control **VR501** was aligned at the time of manufacture for optimum performance over a wide range conditions. Readjust of **VR501** should not be necessary unless unusual local conditions exist, such as;

1) Channel interference in a CATV system
2) Picture bending and/or color beats, which are unusually due to excessive RF signal input when the reciever is too close to a transmitting tower or when the receiver is connected to an antenna distribution system where the RF signal has been amplified.
   In this case, the input signal should be attenuated(with pad or filter) to a satisfactory level.
3) Picture noise caused by "broadcast noise" or weak signal.
   If the broadcast is "clean" and the RF signal is at least 1mV (60dBu), the picture will be noise free in any area.

EXPLODED VIEW



The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REPLACEMENT PARTS LIST

CAPACITORS

LOCA. NO	PART NO	DESCRIPTION
C01	0CN1030F679	C,TUBULA(HIGH DIELE) 0.01MF 16V M
C02	0CN4710K519	C,TUBULA(HIGH DIELE) 470PF 50V K
C03	0CN3910K519	C,TUBULA(HIGH DIELE) 390P 50V K
C04	0CQ4731N509	C,POLYESTER(MYLAR) 0.047U 100V K
C05	0CN1010K519	C,TUBULA(HIGH DIELE) 100PF 50V K
C06	0CN2710K519	C,TUBULA(HIGH DIELE) 270PF 50V K
C08	0CC1500K415	C,CERAMIC(TEMP COMP) 15P 50V J
C09	0CC1500K415	C,CERAMIC(TEMP COMP) 15P 50V J
C10	0CC1500K415	C,CERAMIC(TEMP COMP) 15P 50V J
C103	0CQ1041N509	C,POLYESTER(MYLAR) 0.1MF 100V L
C11	0CC2400K415	C,CERAMIC(TEMP COMP) 24P 50V J NP0 TP
C111	0CN1030F679	C,TUBULA(HIGH DIELE) 0.01MF 16V M
C112	0CN1030F679	C,TUBULA(HIGH DIELE) 0.01MF 16V M
C113	0CN1030F679	C,TUBULA(HIGH DIELE) 0.01MF 16V M
C12	0CN1030F679	C,TUBULA(HIGH DIELE) 0.01MF 16V M
C13	0CE335DK618	C,ELECTROLYTIC 3.3UF STD 50V M
C14	0CE475DK618	C,ELECTROLYTIC 4.7UF STD 50V M
C16	0CN1030F679	C,TUBULA(HIGH DIELE) 0.01MF 16V M
C17	0CQ1041N509	C,POLYESTER(MYLAR) 0.1MF 100V L
C180	0CN1040K949	C,TUBULA(HIGH DIELE) 0.1M 50V Z
C181	0CE475DK618	C,ELECTROLYTIC 4.7UF STD 50V M
C182	0CE475DK618	C,ELECTROLYTIC 4.7UF STD 50V M
C183	0CQ1041N509	C,POLYESTER(MYLAR) 0.1MF 100V L
C184	0CQ1042K439	C,POLYESTER(MYLAR) 0.1UF S 50V J
C185	0CE475DK618	C,ELECTROLYTIC 4.7UF STD 50V M
C186	0CE106DF618	C,ELECTROLYTIC 10UF STD 16V M
C187	0CE337DF618	C,ELECTROLYTIC 330UF STD 16V M
C188	0CE107DF618	C,ELECTROLYTIC 100UF STD 16V M
C189	0CN1030F679	C,TUBULA(HIGH DIELE) 0.01MF 16V M
C20	0CN2210K519	C,TUBULA(HIGH DIELE) 220PF 50V K
C204	0CE106DF618	C,ELECTROLYTIC 10UF STD 16V M *FOR POLAND
C203	0CE107DF618	C,ELECTROLYTIC 100UF STD 16V M
C205	0CE106DF618	C,ELECTROLYTIC 10UF STD 16V M *FOR POLAND
C206	0CE106DF618	C,ELECTROLYTIC 10UF STD 16V M *FOR POLAND
C207	0CE106DF618	C,ELECTROLYTIC 10UF STD 16V M *FOR POLAND
C208	0CE106DF618	C,ELECTROLYTIC 10UF STD 16V M *FOR POLAND
C209	0CE106DF618	C,ELECTROLYTIC 10UF STD 16V M *FOR POLAND
C21	0CN1010K519	C,TUBULA(HIGH DIELE) 100PF 50V K
C210	0CE106DF618	C,ELECTROLYTIC 10UF STD 16V M *FOR POLAND
C218	0CE227DD618	C,ELECTROLYTIC 220UF STD 10V M
C219	0CE226DF618	C,ELECTROLYTIC 22UF STD 16V M
C22	0CN1010K519	C,TUBULA(HIGH DIELE) 100PF 50V K
C220	0CE106DF618	C,ELECTROLYTIC 10UF STD 16V M
C221	0CE106DF618	C,ELECTROLYTIC 10UF STD 16V M
C222	0CN1030F679	C,TUBULA(HIGH DIELE) 0.01MF 16V M
C223	0CE107DF618	C,ELECTROLYTIC 100UF STD 16V M
C224	0CE106DF618	C,ELECTROLYTIC 10UF STD 16V M
C226	0CE106DF618	C,ELECTROLYTIC 10UF STD 16V M
C227	0CQ1021N509	C,POLYESTER(MYLAR) 0.001U 100V K
C228	0CE107DD618	C,ELECTROLYTIC 100UF STD 10V M
C23	0CN1010K519	C,TUBULA(HIGH DIELE) 100PF 50V K
C301	0CN3310K519	C,TUBULA(HIGH DIELE) 330P 50V K
C303	0CC5600K415	C,CERAMIC(TEMP COMP) 56P 50V J
C304	0CQ1021N509	C,POLYESTER(MYLAR) 0.001U 100V K
C305	0CE227DJ618	C,ELECTROLYTIC 220UF STD 35V M FL TP5
C306	0CQ6831N509	C,POLYESTER(MYLAR) 0.068U 100V K
C307	0CE477DJ618	C,ELECTROLYTIC 470UF STD 35V M
C308	181-027C	CAPACITOR TANTAL 25V 1.0UFK TP
C309	0CE105DK618	C,ELECTROLYTIC 1UF STD 50V M
C310	0CQ1041N509	C,POLYESTER(MYLAR) 0.1MF 100V L
C311	0CE476DF618	C,ELECTROLYTIC 47UF STD 16V M
C312	0CQ1041N509	C,POLYESTER(MYLAR) 0.1MF 100V L
C314	0CE108DH618	C,ELECTROLYTIC 1000UF STD 25V M
C402	0CQ1031N509	C,POLYESTER(MYLAR) 0.01U 100V K
C403	0CE227DF618	C,ELECTROLYTIC 220UF STD 16V M
C404	0CE225DK618	C,ELECTROLYTIC 2.2UF STD 50V M
C407	0CE475BP618	C,ELECTROLYTIC 4.7U KME(RG) 160V
C408	0CE105DP618	C,ELECTROLYTIC 1UF STD 160V M
C409	0CQ1031N509	C,POLYESTER(MYLAR) 0.01U 100V K
C411	0CK4710W515	C,CERAMIC(HIGH DIELE) 470PF 500V K
C412	0CE477DJ618	C,ELECTROLYTIC 470UF STD 35V M
C413	0CK4710W515	C,CERAMIC(HIGH DIELE) 470PF 500V K
C414	0CE337DH618	C,ELECTROLYTIC 330UF STD 25V M
C416	0CE475DK618	C,ELECTROLYTIC 4.7UF STD 50V M
C418	0CE1061R618	C,ELECTROLYTIC 10M SM 250V M
C419	0CK4710W515	C,CERAMIC(HIGH DIELE) 470PF 500V K
⚠ C420(20")	181-013B	CAPACITOR MPP 200V 0.36uF J
⚠ (21")	181-013E	C,MPP 200V 0.47uF J
⚠ C421	181-015J	CAPACITOR MPP 1600V 0.0086uF H
C422	181-009V	CAPACITOR PP 200V 0.047UF K
C430	0CE227DD618	C,ELECTROLYTIC 220UF STD 10V M
C501	0CQ2721N409	C,POLYESTER(MYLAR) 2700PF 100V J
C502	0CX1000K409	C,TUBULA(T.C) 10P 50V J
C505	0CE106DF618	C,ELECTROLYTIC 10UF STD 16V M
C507	0CN1040K949	C,TUBULA(HIGH DIELE) 0.1M 50V Z
C508	0CN2230H949	C,TUBULA(HIGH DIELE) 22000P 25V Z F
C509	0CE107DF618	C,ELECTROLYTIC 100UF STD 16V M
C510	0CQ1041N509	C,POLYESTER(MYLAR) 0.1MF 100V L
C511	0CQ1041N509	C,POLYESTER(MYLAR) 0.1MF 100V L
C512	0CE106DF618	C,ELECTROLYTIC 10UF STD 16V M
C513	0CQ1042K439	C,POLYESTER(MYLAR) 0.1UF S 50V J
C514	0CE106DF618	C,ELECTROLYTIC 10UF STD 16V M
C515	0CQ1031N509	C,POLYESTER(MYLAR) 0.01U 100V K
C516	0CQ1031N509	C,POLYESTER(MYLAR) 0.01U 100V K
C517	0CQ1031N509	C,POLYESTER(MYLAR) 0.01U 100V K
C518	0CE336DF618	C,ELECTROLYTIC 33UF STD 16V M
C519	0CE106DF618	C,ELECTROLYTIC 10UF STD 16V M
C520	0CE475DK618	C,ELECTROLYTIC 4.7UF STD 50V M
C521	0CQ4721N509	C,POLYESTER(MYLAR) 0.0047U 100V K
C522	0CQ1041N509	C,POLYESTER(MYLAR) 0.1MF 100V L
C523	0CC1300K415	C,CERAMIC(TEMP COMP) 13P 50V J
C524	0CC1300K415	C,CERAMIC(TEMP COMP) 13P 50V J
C525	0CN2230H949	C,TUBULA(HIGH DIELE) 22000P 25V Z F

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

LOCA. NO	PART NO	DESCRIPTION
C526	0CE476DF618	C,ELECTROLYTIC 47UF STD 16V M
C527	0CQ4721N509	C,POLYESTER(MYLAR) 0.0047U 100V K
C528	0CE105DK618	C,ELECTROLYTIC 1UF STD 50V M
C529	0CQ4721N509	C,POLYESTER(MYLAR) 0.0047U 100V K
C530	0CQ1041N509	C,POLYESTER(MYLAR) 0.1MF 100V L
C531	0CN1030F679	C,TUBULA(HIGH DIELE) 0.01MF 16V M
C532	0CQ2231N509	C,POLYESTER(MYLAR) 0.022MF 100V K
C533	0CE225DK618	C,ELECTROLYTIC 2.2UF STD 50V M
C534	0CQ1041N509	C,POLYESTER(MYLAR) 0.1MF 100V L
C535	0CE106DF618	C,ELECTROLYTIC 10UF STD 16V M
C536	0CE106DF618	C,ELECTROLYTIC 10UF STD 16V M
C537	0CN2230H949	C,TUBULA(HIGH DIELE) 22000P 25V Z F
C538	0CE225DK618	C,ELECTROLYTIC 2.2UF STD 50V M
C539	0CQ3321N509	C,POLYESTER(MYLAR) 0.0033U 100V K
C551	0CE476DF618	C,ELECTROLYTIC 47UF STD 16V M
C552	0CN2230H949	C,TUBULA(HIGH DIELE) 22000P 25V Z F
C553	0CQ1041N509	C,POLYESTER(MYLAR) 0.1MF 100V L
C554	0CQ1041N509	C,POLYESTER(MYLAR) 0.1MF 100V L
C555	0CQ1021N509	C,POLYESTER(MYLAR) 0.001U 100V K
C556	0CQ1021N509	C,POLYESTER(MYLAR) 0.001U 100V K
C557	0CN2230H949	C,TUBULA(HIGH DIELE) 22000P 25V Z F
C561	0CE476DF618	C,ELECTROLYTIC 47UF STD 16V M
C562	0CQ2231N509	C,POLYESTER(MYLAR) 0.022MF 100V K
C563	0CQ1041N509	C,POLYESTER(MYLAR) 0.1MF 100V L
C564	0CQ2242K439	C,POLYESTER(MYLAR) 0.22UF S 50V J
C601	0CE108DJ618	C,ELECTROLYTIC 1000UF STD 35V M
C602	0CQ1031N509	C,POLYESTER(MYLAR) 0.01U 100V K
C603	0CE477DF618	C,ELECTROLYTIC 470UF STD 16V M
C604	0CQ1041N509	C,POLYESTER(MYLAR) 0.1MF 100V L
C605	0CE225DK618	C,ELECTROLYTIC 2.2UF STD 50V M
C606	0CE336DK618	C,ELECTROLYTIC 33UF STD 50V M
C607	0CQ1031N509	C,POLYESTER(MYLAR) 0.01U 100V K
C608	0CE475DK618	C,ELECTROLYTIC 4.7UF STD 50V M
C609	0CE475DK618	C,ELECTROLYTIC 4.7UF STD 50V M
C610	0CE226DK618	C,ELECTROLYTIC 22UF STD 50V M
C650	0CN1020K519	C,TUBULA(HIGH DIELE) 1000PF 50V K
C651	0CN1510K519	C,TUBULA(HIGH DIELE) 150P 50V K
C652	0CN1030F679	C,TUBULA(HIGH DIELE) 0.01MF 16V M
C653	0CC3910K405	C,CERAMIC(TEMP COMP) 390P 50V J SL TP
C654	0CQ3321N509	C,POLYESTER(MYLAR) 0.0033U 100V K
C655	0CX2200K409	C,TUBULA(T.C) 22PF 50V J
C656	0CQ1042K439	C,POLYESTER(MYLAR) 0.1UF S 50V J
C657	0CN1030F679	C,TUBULA(HIGH DIELE) 0.01MF 16V M
C658	0CN1020K519	C,TUBULA(HIGH DIELE) 1000PF 50V K
C662	0CX4700K409	C,TUBULA(T.C) 47PF 50V J
C663	0CX3900K409	C,TUBULA(T.C) 39PF 50V J
C664	0CN1030F679	C,TUBULA(HIGH DIELE) 0.01MF 16V M
C665	0CX5600K409	C,TUBULA(T.C) 56P 50V J
C666	0CN1030F679	C,TUBULA(HIGH DIELE) 0.01MF 16V M
C667	0CX4700K409	C,TUBULA(T.C) 47PF 50V J
C804	0CK4710W515	C,CERAMIC(HIGH DIELE) 470PF 500V K
C805	0CE477DJ618	C,ELECTROLYTIC 470UF STD 35V M

LOCA. NO	PART NO	DESCRIPTION
⚠ C810	181-120E	CAPACITOR ACT 4KV E 222M FL10
C811	0CE475DK618	C,ELECTROLYTIC 4.7UF STD 50V M
C812	0CK4710W515	C,CERAMIC(HIGH DIELE) 470PF 500V K
C813	181-091C	C,DE0705 R 471K 1KV
C814	0CE227DP650	C,ELECTROLYTIC 220UF STD 160V M
C817	181-001F	C,ELECTROLYTIC 400V 220UF M
C818	0CK47102515	C,CERAMIC(HIGH DIELE) 470P 2KV K
C819	0CK4710W515	C,CERAMIC(HIGH DIELE) 470PF 500V K
C820	0CE227DJ618	C,ELECTROLYTIC 220UF STD 35V M FL TP5
⚠ C822	181-506B	CAPACITOR ECQ U 2A154MVZ
C823	0CN1020K519	C,TUBULA(HIGH DIELE) 1000PF 50V K
C824	0CE475DK618	C,ELECTROLYTIC 4.7UF STD 50V M
C825	0CE227DJ618	C,ELECTROLYTIC 220UF STD 35V M FL TP5
⚠ C826	181-120E	CAPACITOR ACT 4KV E 222M FL10
C827	0CE1071P650	C,ELECTROLYTIC 100M SM 160V M
⚠ C828	181-506B	CAPACITOR ECQ U 2A154MVZ
C829	0CK4710W515	C,CERAMIC(HIGH DIELE) 470PF 500V K
C830	0CE477DF618	C,ELECTROLYTIC 470UF STD 16V M
C832	0CK10201515	C,CERAMIC(HIGH DIELE) 1000P 1KV K
C833	0CK10201515	C,CERAMIC(HIGH DIELE) 1000P 1KV K
C834	0CK10201515	C,CERAMIC(HIGH DIELE) 1000P 1KV K
C835	0CK10201515	C,CERAMIC(HIGH DIELE) 1000P 1KV K
C840	0CE227DD618	C,ELECTROLYTIC 220UF STD 10V M
C841	0CN1030F679	C,TUBULA(HIGH DIELE) 0.01MF 16V M
C901	0CN3310K519	C,TUBULA(HIGH DIELE) 330P 50V K
C902	0CN2710K519	C,TUBULA(HIGH DIELE) 270PF 50V K
C903	0CN3310K519	C,TUBULA(HIGH DIELE) 330P 50V K
C904	0CE476DF618	C,ELECTROLYTIC 47UF STD 16V M
C905	181-033S	CAPACITOR 2KV B 122K TP7.5
C906	0CN1810K519	C,TUBULA(HIGH DIELE) 180PF 50V K

DIODES

⚠ DB813	0DD260000BD	DIODE BRIDGE D2SBA60 SHINDENKEN
D01	0DD414809ED	DIODE DS4148
D101	0DD414809ED	DIODE DS4148
D301	0DD400509AA	DIODE 1N4005 GP
D401	0DD414809ED	DIODE DS4148
D406	0DD060009AC	DIODE TVR06J 0.6A/600V 250NS
D408	0DD414809ED	DIODE DS4148
D410	0DD060009AC	DIODE TVR06J 0.6A/600V 250NS
D411	0DD150009CA	DIODE RGP15J
D413	0DD060009AC	DIODE TVR06J 0.6A/600V 250NS
D415	0DD414809ED	DIODE DS4148
D416	0DD414809ED	DIODE DS4148
D501	0DD414809ED	DIODE DS4148
D502	0DD414809ED	DIODE DS4148
D503	0DD414809ED	DIODE DS4148
D504	0DD414809ED	DIODE DS4148
D505	0DD414809ED	DIODE DS4148
D506	0DD414809ED	DIODE DS4148
D507	0DD414809ED	DIODE DS4148
D508	0DD414809ED	DIODE DS4148

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LOCA. NO	PART NO	DESCRIPTION
D601	0DD414809ED	DIODE DS4148
D801	0DD150009CA	DIODE RGP15J
D805	0DD060009AC	DIODE TVR06J 0.6A/600V 250NS
D806	0DD560009AA	DIODE BYT56M TEMIC TP TEMIC
D809	0DD100009AM	DIODE EU1ZV
D810	0DD100009AM	DIODE EU1ZV
D811	0DD060009AC	DIODE TVR06J 0.6A/600V 250NS
D812	0DD060009AC	DIODE TVR06J 0.6A/600V 250NS
D901	0DD414809ED	DIODE DS4148
D902	0DD414809ED	DIODE DS4148
D903	0DD414809ED	DIODE DS4148
LD01	0DD000000BA	DIODE LAMP(DIFFUSION TYPE)
ZD401	0DZ910009BA	DIODE ZENER MTZ9.1B
ZD402	0DZ510009AB	DIODE ZENER MTZ5.1B
ZD404	0DZ330009BA	DIODE ZENER HZT33
ZD551	0DZ510009AB	DIODE ZENER MTZ5.1B
ZD801	0DZ910009BA	DIODE ZENER MTZ9.1B
ZD810	0DZ750009AA	DIODE ZENER MTZ7.5B

ICs

IC01	0IMI853407C	IC,MITSUBISH LG8534-07C
IC02	0IAL240210A	IC,ATMEL AT24C02-10PC 8D EEPROM(2K,IIC)
IC03	0IKE704200B	IC,KEC KIA7042P 3P 4.2V RESET
IC201	0ISA722200A	IC, SANYO LA7222 (1280 AUDIO)
IC202	0ISG511400A	IC,SGS-THOMSON TEA5114A 16D RGB S/W *FOR POLAND
IC301	0ISA783300A	IC,SANYO LA7833 7SIP V/OUT 2.2A(P-P)
IC401	0IKE781200C	IC,KEC KIA7812PI 3P(TO-220IS) 12V,1A
IC430	0IKE780800A	IC,KEC KIA7808PI 3P(TO-220IS) 1A,8V
IC501	0IPH836255B	IC,PHILIPS TDA8362B/N5 52SD P/N/S 1CHIP
IC502	0IPH466500B	IC,PHILIPS TDA4665-V4 16D 1H D/L(TAIWAN)
IC503	0IPH839520A	IC,PHILIPS TDA8395P/N2 16D SECAM DETECT.
IC601	0ISG200600A	IC, SGS-THOMSON TDA2006,SOUND
⚠ IC801	0ITF435000A	IC,TELEFUNKEN 4N35(G)V 6D PHOTO COUPLER
⚠ IC802	0ISK570700A	IC,SANKEN STR/S5707(LF.953) 9P SMPS-CNTR
IC840	0IKE780500K	IC,KEC KIA7805PI 3P(TO-220IS) 5V,1A

COILS & TRANSFORMERS

L01	0LA0392K119	INDUCTOR 39UH K
L103	150-C01D	COIL,CHOKE 0.55UH A 1105
L181	0LA0331K119	INDUCTOR AXIAL LEAD 3.3UH K 2.3*3.4 TP
L182	0LA0222K119	INDUCTOR 22UH K
L401	125-022K	CORE FERRITE 1UH
⚠ L402	150-L02C	COIL H-LINEARITY 170UH
L403	125-022K	CORE FERRITE 1UH
L501	0LA1000K119	INDUCTOR 100UH K
L504	0LA0331K119	INDUCTOR AXIAL LEAD 3.3UH K 2.3*3.4 TP
L650	0LA0821K119	INDUCTOR 8.2UH K
L652	0LA0122K119	INDUCTOR 12UH K
L653	0LA0821K119	INDUCTOR 8.2UH K
L654	0LA0122K119	INDUCTOR 12UH K
L802	150-C02F	COIL CHOKE 82UH R1217
L803	125-022K	CORE FERRITE 1UH
L804	125-123A	CORE FERRITE BFD3565R2F
L805	125-022K	CORE FERRITE 1UH
L901	150-C02A	COIL CHOKE 10UH R0814
⚠ T402	151-C02B	TRANSFORMER H-DRIVE,EI-19,BULK
⚠ T801	150-F06N	COIL LINE FILTER SQE2424 7MH
⚠ T802(20")	151-B06Q	TRANSFORMER SMPS FOIL EER4215 STR-S5707 W
⚠ (21")	151-B06L	TRANSFORMER,SMPS SMPS FOIL EER4215 STR-S5707 W
VL501	150-E08N	COIL VAR,07S 1B 38.9MHZ

TRANSISTORS

Q01	0TR126609AA	TRANSISTOR KTA1266-TP-Y (KTA1015) KEC
Q02	0TR319809AA	TRANSISTOR KTC3198-TP-Y (KTC1815)KEC
Q101	0TR319809AB	TRANSISTOR KTC3198-TP-GR (KTC1815) KEC
Q102	0TR319709AB	TRANSISTOR KTC3197,TP(KTC388A),KEC
Q180	0TR126609AA	TRANSISTOR KTA1266-TP-Y (KTA1015) KEC
Q181	0TR126609AA	TRANSISTOR KTA1266-TP-Y (KTA1015) KEC
Q182	0TR126609AA	TRANSISTOR KTA1266-TP-Y (KTA1015) KEC
Q201	0TR126609AA	TRANSISTOR KTA1266-TP-Y (KTA1015) KEC
Q202	0TR319809AA	TRANSISTOR KTC3198-TP-Y (KTC1815)KEC
Q220	0TR319809AA	TRANSISTOR KTC3198-TP-Y (KTC1815)KEC
Q301	0TR319809AA	TRANSISTOR KTC3198-TP-Y (KTC1815)KEC
Q302	0TR319809AA	TRANSISTOR KTC3198-TP-Y (KTC1815)KEC
Q303	0TR319809AA	TRANSISTOR KTC3198-TP-Y (KTC1815)KEC
Q401	0TR102609AA	TRANSISTOR KTC1026-Y TP(KTC2230A),KEC
⚠ Q402	0TR249900AA	TRANSISTOR KTD2499 TO-3P(H)IS TOSHIBA
Q503	0TR126609AA	TRANSISTOR KTA1266-TP-Y (KTA1015) KEC
Q508	0TR102009AB	TRANSISTOR KRC102M,TP(KRC1202),KEC
Q509	0TR319809AB	TRANSISTOR KTC3198-TP-GR (KTC1815) KEC
Q510	0TR319809AB	TRANSISTOR KTC3198-TP-GR (KTC1815) KEC
Q511	0TR319809AB	TRANSISTOR KTC3198-TP-GR (KTC1815) KEC
Q512	0TR126609AA	TRANSISTOR KTA1266-TP-Y (KTA1015) KEC
Q513	0TR126609AA	TRANSISTOR KTA1266-TP-Y (KTA1015) KEC
Q514	0TR126609AA	TRANSISTOR KTA1266-TP-Y (KTA1015) KEC
Q515	0TR319809AA	TRANSISTOR KTC3198-TP-Y (KTC1815)KEC
Q517	0TR126609AA	TRANSISTOR KTA1266-TP-Y (KTA1015) KEC
Q601	0TR102009AB	TRANSISTOR KRC102M,TP(KRC1202),KEC
Q650	0TR319809AA	TRANSISTOR KTC3198-TP-Y (KTC1815)KEC
Q651	0TR319809AA	TRANSISTOR KTC3198-TP-Y (KTC1815)KEC
Q654	0TR319809AA	TRANSISTOR KTC3198-TP-Y (KTC1815)KEC
Q802	0TR320209AA	TRANSISTOR KTC3202-TP-Y (KTC1959)KEC
Q803	0TR319809AB	TRANSISTOR KTC3198-TP-GR (KTC1815) KEC
Q804	0TR319809AA	TRANSISTOR KTC3198-TP-Y (KTC1815)KEC
Q810	0TR102609AA	TRANSISTOR KTC1026-Y TP(KTC2230A),KEC
Q901	0TR322900AA	TRANSISTOR KTC3229 (KTC2068),KEC
Q902	0TR322900AA	TRANSISTOR KTC3229 (KTC2068),KEC
Q903	0TR322900AA	TRANSISTOR KTC3229 (KTC2068),KEC

RESISTORS

⚠ FR421	0RF0101J607	R,FUSIBLE 1 1W 5%
⚠ FR422	0RF0470J607	R,FUSIBLE 0.47 1W 5%
⚠ FR423	180-D02J	R,RNF RND(S) CR 2W 1.6 J
⚠ FR804	0RF0201K607	R,FUSIBLE 2 2W 5%

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Replace only with part number specified.

LOCA. NO	PART NO	DESCRIPTION
⚠ FR812	ORF0470H609	R,FUSIBLE 0.47 1/2W 5
R02	ORD2702F609	R,CARBON FILM 27K 1/6W 5
R03	ORD9101F609	R,CARBON FILM 9.1K 1/6W 5
R04	ORD2200F609	R,CARBON FILM 220 1/6W 5
R05	ORD0912F609	R,CARBON FILM 91 1/6W 5
R06	ORD1001F609	R,CARBON FILM 1.0K 1/6W 5
R07	ORD3300F609	R,CARBON FILM 330 1/6W 5
R08	ORD4700F609	R,CARBON FILM 470 1/6W 5
R105	ORD3302F609	R,CARBON FILM 33K 1/6W 5
R106	ORD1003F609	R,CARBON FILM 100K 1/6W 5
R107	ORD3302F609	R,CARBON FILM 33K 1/6W 5
R108	ORD2402F609	R,CARBON FILM 24K 1/6W 5
R11	ORD5601F609	R,CARBON FILM 5.6K 1/6W 5
R112	ORD2200F609	R,CARBON FILM 220 1/6W 5
R113	ORD5101F609	R,CARBON FILM 5.1K 1/6W 5
R114	ORD6800F609	R,CARBON FILM 680 1/6W 5
R116	ORD0682F609	R,CARBON FILM 68 1/6W 5
	ORD1200F609	R,CARBON FILM 120 1/6W 5 *FOR POLAND 21"
R117	ORD1001F609	R,CARBON FILM 1.0K 1/6W 5
R118	ORD0562F609	R,CARBON FILM 56 1/6W 5
	ORD0392F609	R,CARBON FILM 39 1/6W 5 *FOR POLAND 21"
R12	ORD1001F609	R,CARBON FILM 1.0K 1/6W 5
R13	ORD1601F609	R,CARBON FILM 1.6K 1/6W 5
R14	ORD1201F609	R,CARBON FILM 1.2K 1/6W 5
R15	ORD2001F609	R,CARBON FILM 2.0K 1/6W 5
R16	ORD3901F609	R,CARBON FILM 3.9K 1/6W 5
R17	ORD3301F609	R,CARBON FILM 3.3K 1/6W 5
R18	ORD1001F609	R,CARBON FILM 1.0K 1/6W 5
R180	ORD4702F609	R,CARBON FILM 47K 1/6W 5
R181	ORD4702F609	R,CARBON FILM 47K 1/6W 5
R182	ORD4702F609	R,CARBON FILM 47K 1/6W 5
R183	ORD3302F609	R,CARBON FILM 33K 1/6W 5
R184	ORD9102F609	R,CARBON FILM 91K 1/6W 5
R185	ORD1003F609	R,CARBON FILM 100K 1/6W 5
R186	ORD1002F609	R,CARBON FILM 10K 1/6W 5
R187	ORD1802F609	R,CARBON FILM 18K 1/6W 5
	ORD2402F609	R,CARBON FILM 24 1/6W 5 *FOR POLAND 21"
R188	ORD1202F609	R,CARBON FILM 12K 1/6W 5
R19	ORD6802F609	R,CARBON FILM 68K 1/6W 5 *FOR POLAND 21"
R20	ORD8201F609	R,CARBON FILM 8.2K 1/6W 5
R201	ORD0752F609	R,CARBON FILM 75 1/6W 5
R202	ORD3300F609	R,CARBON FILM 330 1/6W 5 *FOR POLAND 21"
R203	ORD3300F609	R,CARBON FILM 330 1/6W 5
R204	ORD3300F609	R,CARBON FILM 330 1/6W 5 *FOR CIS
R205	ORD0822F609	R,CARBON FILM 82 1/6W 5
R206	ORD0752F609	R,CARBON FILM 75 1/6W 5 *FOR POLAND 21"
R207	ORD0752F609	R,CARBON FILM 75 1/6W 5 *FOR POLAND 21"
R208	ORD0752F609	R,CARBON FILM 75 1/6W 5 *FOR POLAND 21"
R209	ORD1501F609	R,CARBON FILM 1.5K 1/6W 5
	ORD2200F609	R,CARBON FILM 220 1/6W 5 *FOR POLAND 21"
R21	ORD1002F609	R,CARBON FILM 10K 1/6W 5
R210	ORD1501F609	R,CARBON FILM 1.5K 1/6W 5

LOCA. NO	PART NO	DESCRIPTION
	ORD2200F609	R,CARBON FILM 220 1/6W 5 *FOR POLAND 21"
R211	ORD1501F609	R,CARBON FILM 1.5K 1/6W 5
	ORD2200F609	R,CARBON FILM 220 1/6W 5 *FOR POLAND 21"
R212	ORD2202F609	R,CARBON FILM 22K 1/6W 5
R213	ORD3000F609	R,CARBON FILM 300 1/6W 5 *FOR POLAND 21"
R214	ORD3000F609	R,CARBON FILM 300 1/6W 5 *FOR POLAND 21"
R215	ORD3000F609	R,CARBON FILM 300 1/6W 5 *FOR POLAND 21"
R216	ORD4700F609	R,CARBON FILM 470 1/6W 5 *FOR POLAND 21"
R217	ORD4700F609	R,CARBON FILM 470 1/6W 5
R218	ORD3001F609	R,CARBON FILM 3.0K 1/6W 5
R219	ORD3001F609	R,CARBON FILM 3.0K 1/6W 5 *FOR POLAND 21"
R22	ORD1502F609	R,CARBON FILM 15K 1/6W 5
R220	ORD1001F609	R,CARBON FILM 1.0K 1/6W 5
R221	ORD1001F609	R,CARBON FILM 1.0K 1/6W 5
R222	ORD0752F609	R,CARBON FILM 75 1/6W 5 *FOR POLAND 21"
R224	ORD2001F609	R,CARBON FILM 2.0K 1/6W 5
R225	ORD4700F609	R,CARBON FILM 470 1/6W 5
R226	ORD1101F609	R,CARBON FILM 1.1K 1/6W 5
	ORD1201F609	R,CARBON FILM 1.2K 1/6W 5 *FOR POLAND 21"
R227	ORD2001F609	R,CARBON FILM 2.0K 1/6W 5
R228	ORD0562F609	R,CARBON FILM 56 1/6W 5
R229	ORD3900F609	R,CARBON FILM 390 1/6W 5
R23	ORD6801F609	R,CARBON FILM 6.8K 1/6W 5
R230	ORD3301F609	R,CARBON FILM 3.3K 1/6W 5
R231	ORD6801F609	R,CARBON FILM 6.8K 1/6W 5
R232	ORD2200F609	R,CARBON FILM 220 1/6W 5
R26	ORD1001F609	R,CARBON FILM 1.0K 1/6W 5
R27	ORD4701F609	R,CARBON FILM 4.7K 1/6W 5
R29	ORD6802F609	R,CARBON FILM 68K 1/6W 5
R30	ORD1001F609	R,CARBON FILM 1.0K 1/6W 5
R301	ORD6200F609	R,CARBON FILM 620 1/6W 5
R302	ORD8200H609	R,CARBON FILM 820 1/2W 5
R303(20")	ORD9102F609	R,CARBON FILM 91K 1/6W 5
(21")	ORD9102F609	R,CARBON FILM 91K 1/6W 5
R304(20")	ORD0822F609	R,CARBON FILM 82 1/6W 5
(21")	ORD3600F609	R,CARBON FILM 360 1/6W 5
R305	ORD4700F609	R,CARBON FILM 470 1/6W 5
R306	ORD3002F609	R,CARBON FILM 30K 1/6W 5
R307	ORD2402F609	R,CARBON FILM 24K 1/6W 5
R308	ORD1101F609	R,CARBON FILM 1.1K 1/6W 5
R309	ORD1202F609	R,CARBON FILM 12K 1/6W 5
R31	ORD1201F609	R,CARBON FILM 1.2K 1/6W 5
R310	ORS3300J607	R,METAL FILM OXIDE 330 1W 5%
R311	ORD0221H609	R,CARBON FILM 2.2 1/2W 5
R312	ORD3902F609	R,CARBON FILM 39K 1/6W 5
R313	ORD4702F609	R,CARBON FILM 47K 1/6W 5
R314	ORD1202F609	R,CARBON FILM 12K 1/6W 5
R315	ORD4701H609	R,CARBON FILM 4.7K 1/2W 5
R316	ORD1002F609	R,CARBON FILM 10K 1/6W 5
R317	ORD0471H609	R,CARBON FILM 4.7 1/2W 5
R32	ORD3002F609	R,CARBON FILM 30K 1/6W 5
R33	ORD4702F609	R,CARBON FILM 47K 1/6W 5

LOCA. NO	PART NO	DESCRIPTION
R34	0RD1002F609	R,CARBON FILM 10K 1/6W 5
R35	0RD2200F609	R,CARBON FILM 220 1/6W 5
R36	0RD4701F609	R,CARBON FILM 4.7K 1/6W 5
R37	0RD4701F609	R,CARBON FILM 4.7K 1/6W 5
R38	0RD4701F609	R,CARBON FILM 4.7K 1/6W 5
R39	0RD3301F609	R,CARBON FILM 3.3K 1/6W 5
R40	0RD1002F609	R,CARBON FILM 10K 1/6W 5
R410	0RD3903H609	RESISTOR,FIXED CARBON FILM 390K 1/2W 5 TA52
R411	180-B01C	RESISTOR RS RECT S 5W 3.3K J DOUBLE
R412	0RD1202F609	R,CARBON FILM 12K 1/6W 5
R413	0RS3301J607	R,METAL FILM OXIDE 3.30K 1W 5%
R414	0RD2701H609	R,CARBON FILM 2.7K 1/2W 5
R416	0RD2702F609	R,CARBON FILM 27K 1/6W 5
R417	0RD1000F609	R,CARBON FILM 100 1/6W 5
R421	0RS1802K607	R,METAL FILM OXIDE 18K 2W 5%
R422(20")	0RD9102H609	R,CARBON FILM 91K 1/2W 5
(21")	0RD7502H609	R,CARBON FILM 75K 1/2W 5
R423	0RD8202H609	R,CARBON FILM 82K 1/2W 5
R424	0RD1002F609	R,CARBON FILM 10K 1/6W 5
R425	0RS1002K607	R,CARBON FILM 10K 2W 5
R426	0RD0392H609	R,CARBON FILM 39 1/2W 5
R430	0RS0681K607	R,METAL FILM OXIDE 6.8 2W 5%
R44	0RD1002F609	R,CARBON FILM 10K 1/6W 5 *FOR CIS
R45	0RD1002F609	R,CARBON FILM 10K 1/6W 5
R48	0RD1002F609	R,CARBON FILM 10K 1/6W 5
R49	0RD4701F609	R,CARBON FILM 4.7K 1/6W 5
R50	0RD1003F609	R,CARBON FILM 100K 1/6W 5
R501	0RD1001F609	R,CARBON FILM 1.0K 1/6W 5
R502	0RD1002F609	R,CARBON FILM 10K 1/6W 5
R503	0RN3903F609	RESISTOR,FIX METAL FILM 390K 1/6W 5% TA52
R504	0RD1000F609	R,CARBON FILM 100 1/6W 5
R505	0RD1501F609	R,CARBON FILM 1.5K 1/6W 5
R506	0RD3300F609	R,CARBON FILM 330 1/6W 5
R508	0RD1001F609	R,CARBON FILM 1.0K 1/6W 5
R509	0RD1001F609	R,CARBON FILM 1.0K 1/6W 5
R510	0RD1001F609	R,CARBON FILM 1.0K 1/6W 5
R511	0RD1001F609	R,CARBON FILM 1.0K 1/6W 5
R512	0RD1002F609	R,CARBON FILM 10K 1/6W 5
R514	0RD1001F609	R,CARBON FILM 1.0K 1/6W 5
R515	0RD4702F609	R,CARBON FILM 47K 1/6W 5
R516	0RD2002F609	R,CARBON FILM 20K 1/6W 5
R517	0RD2701F609	R,CARBON FILM 2.7K 1/6W 5
R518	0RD1201F609	R,CARBON FILM 1.2K 1/6W 5
R519	0RD1203F609	R,CARBON FILM 120K 1/6W 5
R520	0RD2403F609	R,CARBON FILM 240K 1/6W 5
R521	0RD2001F609	R,CARBON FILM 2.0K 1/6W 5
R522	0RD1202F609	R,CARBON FILM 12K 1/6W 5
R523	0RD1003F609	R,CARBON FILM 100K 1/6W 5
R524	0RD1002F609	R,CARBON FILM 10K 1/6W 5
R525	0RD1000F609	R,CARBON FILM 100 1/6W 5
R526	0RD1502F609	R,CARBON FILM 15K 1/6W 5
R527(20")	0RD6203F609	RESISTOR,FIXED CARBON FILM 620K 1/6W 5 TA52

LOCA. NO	PART NO	DESCRIPTION
(21")	0RD6203F609	RESISTOR,FIXED CARBON FILM 620K 1/6W 5 TA52
R528	0RD1002F609	R,CARBON FILM 10K 1/6W 5
R535	0RD8200F609	R,CARBON FILM 820 1/6W 5
R536	0RD2002F609	R,CARBON FILM 20K 1/6W 5
R538	0RD7500F609	R,CARBON FILM 750 1/6W 5
R54	0RD1002F609	R,CARBON FILM 10K 1/6W 5
R540	0RD5600F609	R,CARBON FILM 560 1/6W 5
R541	0RD5600F609	R,CARBON FILM 560 1/6W 5
R542	0RD5600F609	R,CARBON FILM 560 1/6W 5
R543	0RD6803F609	R,CARBON FILM 680K 1/6W 5
R544	0RD2401F609	R,CARBON FILM 2.4K 1/6W 5
R545	0RD2401F609	R,CARBON FILM 2.4K 1/6W 5
R546	0RD2401F609	R,CARBON FILM 2.4K 1/6W 5
R547	0RD1000F609	R,CARBON FILM 100 1/6W 5
R548	0RD3301F609	R,CARBON FILM 3.3K 1/6W 5
R549	0RD2401F609	R,CARBON FILM 2.4K 1/6W 5
R551	0RD1200F609	R,CARBON FILM 120 1/6W 5
R56	0RD1000F609	R,CARBON FILM 100 1/6W 5
R561	0RD1003F609	R,CARBON FILM 100K 1/6W 5
R562	0RD1003F609	R,CARBON FILM 100K 1/6W 5
R57	0RD1002F609	R,CARBON FILM 10K 1/6W 5
R573	0RD9101F609	R,CARBON FILM 9.1K 1/6W 5
	0RD3901F609	R,CARBON FILM 3.9K 1/6W 5 *FOR POLAND 21"
R574	0RD9101F609	R,CARBON FILM 9.1K 1/6W 5
	0RD3901F609	R,CARBON FILM 3.9K 1/6W 5 *FOR POLAND 21"
R575	0RD9101F609	R,CARBON FILM 9.1K 1/6W 5
	0RD3901F609	R,CARBON FILM 3.9K 1/6W 5 *FOR POLAND 21"
R576	0RD2001F609	R,CARBON FILM 2.0K 1/6W 5
R577	0RD2001F609	R,CARBON FILM 2.0K 1/6W 5
R578	0RD2001F609	R,CARBON FILM 2.0K 1/6W 5
R58	0RD1000F609	R,CARBON FILM 100 1/6W 5
R59	0RD1002F609	R,CARBON FILM 10K 1/6W 5
R60	0RD1002F609	R,CARBON FILM 10K 1/6W 5
R601	0RD1201F609	R,CARBON FILM 1.2K 1/6W 5
R602	0RD0221H609	R,CARBON FILM 2.2 1/2W 5
R603	0RD9102F609	R,CARBON FILM 91K 1/6W 5
R604	0RD1003F609	R,CARBON FILM 100K 1/6W 5
R605	0RD1003F609	R,CARBON FILM 100K 1/6W 5
R606	0RD6201F609	R,CARBON FILM 6.2K 1/6W 5
R607	0RD1003F609	R,CARBON FILM 100K 1/6W 5
R608	0RD1001F609	R,CARBON FILM 1.0K 1/6W 5
R609	0RD2001F609	R,CARBON FILM 2.0K 1/6W 5
R61	0RD1000F609	R,CARBON FILM 100 1/6W 5
R610	0RD8201F609	R,CARBON FILM 8.2K 1/6W 5
R611	0RD2001F609	R,CARBON FILM 2.0K 1/6W 5
R62	0RD1000F609	R,CARBON FILM 100 1/6W 5
R63	0RD1002F609	R,CARBON FILM 10K 1/6W 5
R64	0RD1000F609	R,CARBON FILM 100 1/6W 5
R65	0RD1000F609	R,CARBON FILM 100 1/6W 5
R650	0RD1001F609	R,CARBON FILM 1.0K 1/6W 5
R651	0RD1001F609	R,CARBON FILM 1.0K 1/6W 5
R653	0RD6801F609	R,CARBON FILM 6.8K 1/6W 5

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

LOCA. NO	PART NO	DESCRIPTION
R654	ORD1501F609	R,CARBON FILM 1.5K 1/6W 5
R655	ORD0752F609	R,CARBON FILM 75 1/6W 5
R656	ORD8202F609	R,CARBON FILM 82K 1/6W 5
R657	ORD1003F609	R,CARBON FILM 100K 1/6W 5
R658	ORD1000F609	R,CARBON FILM 100 1/6W 5
R66	ORD1000F609	R,CARBON FILM 100 1/6W 5
R665	ORD1501F609	R,CARBON FILM 1.5K 1/6W 5
R669	ORD4700F609	R,CARBON FILM 470 1/6W 5
R67	ORD1000F609	R,CARBON FILM 100 1/6W 5
R670	ORD3301F609	R,CARBON FILM 3.3K 1/6W 5
R671	ORD1500F609	R,CARBON FILM 150 1/6W 5
R672	ORD8200F609	R,CARBON FILM 820 1/6W 5
R673	ORD4700F609	R,CARBON FILM 470 1/6W 5
R674	ORD1501F609	R,CARBON FILM 1.5K 1/6W 5
R675	ORD1300F609	R,CARBON FILM 130 1/6W 5
R676	ORD9101F609	R,CARBON FILM 9.1K 1/6W 5
R677	ORD2200F609	R,CARBON FILM 220 1/6W 5
R68	ORD1000F609	R,CARBON FILM 100 1/6W 5
R71	ORD1002F609	R,CARBON FILM 10K 1/6W 5 *FOR CIS
R72	ORD1001F609	R,CARBON FILM 1.0K 1/6W 5
R77	ORD2200F609	R,CARBON FILM 220 1/6W 5
R79	ORD1000F609	R,CARBON FILM 100 1/6W 5
R80	ORD1000F609	R,CARBON FILM 100 1/6W 5
R803	ORD3302F609	R,CARBON FILM 33K 1/6W 5
R804	ORD3302F609	R,CARBON FILM 33K 1/6W 5
R805	ORD2001F609	R,CARBON FILM 2.0K 1/6W 5
R806	ORD0102F609	R,CARBON FILM 10 1/6W 5
R81	ORD3301F609	R,CARBON FILM 3.3K 1/6W 5
⚠ R811	180-C01C	RESISTOR RC 1/2W 8.2M K TA52
R814	ORD9100F609	R,CARBON FILM 910 1/6W 5
R817	ORD3001H609	RESISTOR,FIXED CARBON FILM 3.0K 1/2W 5 TA52
R818	ORD3902H609	R,CARBON FILM 39K 1/2W 5
R819	ORD1601F609	R,CARBON FILM 1.6K 1/6W 5
R82	ORD2200F609	R,CARBON FILM 220 1/6W 5
R820	ORD1001F609	R,CARBON FILM 1.0K 1/6W 5
R821	180-A03Q	R,RW RECT G 7W 1.0 J DOUBLE(SP)
R822	ORD1000H609	R,CARBON FILM 100 1/2W 5
R823	ORD5601H609	R,CARBON FILM 5.6K 1/2W 5
R824	ORS0182J607	R,METAL FILM OXIDE 18 1W 5% TA62
R825	180-A01E	R,RW ROUND G 2W 0.33 J
R827	ORS2202K607	R,METAL FILM OXIDE 22K 2W 5%
R828	ORN0680H609	R,METAL FILM 0.68 1/2W 5
R829	ORS2202K607	R,METAL FILM OXIDE 22K 2W 5%
R83	ORD1801F609	R,CARBON FILM 1.8K 1/6W 5
R830(20")	ORS0122H609	R,METAL FILM OXIDE 12 1/2W 5
(21")	ORS0152H609	RESISTOR,FIX METAL FILM OXIDE 15 1/2W 5 TA52
R84	ORD4701F609	R,CARBON FILM 4.7K 1/6W 5
R85	ORD4701F609	R,CARBON FILM 4.7K 1/6W 5
R86	ORD4701F609	R,CARBON FILM 4.7K 1/6W 5
R901	ORD1000F609	R,CARBON FILM 100 1/6W 5
R902	ORD1000F609	R,CARBON FILM 100 1/6W 5
R903	ORD1000F609	R,CARBON FILM 100 1/6W 5

LOCA. NO	PART NO	DESCRIPTION
R907	ORD2701H609	R,CARBON FILM 2.7K 1/2W 5
R908	ORD2701H609	R,CARBON FILM 2.7K 1/2W 5
R909	ORD2701H609	R,CARBON FILM 2.7K 1/2W 5
R910	ORD1801F609	R,CARBON FILM 1.8K 1/6W 5
R911	ORD1801F609	R,CARBON FILM 1.8K 1/6W 5
R912	ORD1801F609	R,CARBON FILM 1.8K 1/6W 5
R913	ORD3000F609	R,CARBON FILM 300 1/6W 5
R914	ORD3900F609	R,CARBON FILM 390 1/6W 5
R915	ORD3000F609	R,CARBON FILM 300 1/6W 5
R916	ORD1800F609	R,CARBON FILM 180 1/6W 5
R917	ORD1000F609	R,CARBON FILM 100 1/6W 5
R918	ORS1202L667	RESISTOR,FIX METAL FILM OXIDE 12K 3W 5 SF30
R919	ORS1202L667	RESISTOR,FIX METAL FILM OXIDE 12K 3W 5 SF30
R920	ORS1202L667	RESISTOR,FIX METAL FILM OXIDE 12K 3W 5 SF30
R921	ORD0562F609	R,CARBON FILM 56 1/6W 5
R922	ORD0562F609	R,CARBON FILM 56 1/6W 5
R923	ORD0562F609	R,CARBON FILM 56 1/6W 5
VR301	180-F03A	R,SEMI-FIX(H) EVN-DJAA03 B201
VR302	180-F03H	R,SEMI-FIX(H) EVN-DJAA03 B103
VR501	180-F03G	R,SEMI-FIX(H) EVN-DJAA03 B502
VR502	180-F03H	R,SEMI-FIX(H) EVN-DJAA03 B103
VR901	180-F03G	R,SEMI-FIX(H) EVN-DJAA03 B502
VR902	180-F03G	R,SEMI-FIX(H) EVN-DJAA03 B502
VR903	180-F03G	R,SEMI-FIX(H) EVN-DJAA03 B502
VR904	180-F03C	RESISTOR EVN-DJAA03 B501 SEMI-FIX(H) TA
VR905	180-F03C	RESISTOR EVN-DJAA03 B501 SEMI-FIX(H) TA
ZD01	ORD1202F609	R,CARBON FILM 12K 1/6W 5
ZD02	ORD1202F609	R,CARBON FILM 12K 1/6W 5
ZD03	ORD1202F609	R,CARBON FILM 12K 1/6W 5

FILTERS & OSCILLATORS

X01	156-A01U	CRYSTAL 3.6 15PF 90 OHM BULK
X501	156-A01B	CRYSTAL 3.579545 16PF 90 OHM
X502	156-A01H	CRYSTAL 4.433619 16PF 80 OHM BULK
X650	166-E03A	FILTER RESO CSB500E25 500
Z101	166-A01M	FILTER OFWK6265K(MONO)
Z650	166-B02D	FILTER B.P FILTER SFSH6.0MCB-TF21
Z652	166-B02E	FILTER B.P FILTER SFSH6.5MCB-TF21
Z653	166-B02D	FILTER B.P FILTER SFSH6.0MCB-TF21
Z654	166-B02C	FILTER B.P FILTER SFSH5.5MCB-TF21
Z655	166-C04C	FILTER TRAP TPWA02B-TF21(5.5/6.5)
Z657	166-C02D	FILTER TRAP TPS6.0MB-TF21

TELETEXT PARTS

C01T	0CN1030F679	C,TUBULA(HIGH DIELE) 0.01MF 16V M
C02T	0CE104DK618	C,ELECTROLYTIC 0.1UF STD 50V M
C03T	0CN1030F679	C,TUBULA(HIGH DIELE) 0.01MF 16V M
C04T	0CE107DD618	C,ELECTROLYTIC 100UF STD 10V M
C05T	0CE476DF618	C,ELECTROLYTIC 47UF STD 16V M
C06T	0CN1020K519	C,TUBULA(HIGH DIELE) 1000PF 50V K
C07T	0CE104DK618	C,ELECTROLYTIC 0.1UF STD 50V M
C09T	0CX4700K409	C,TUBULA(T.C) 47PF 50V J

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Replace only with part number specified.

LOCA. NO	PART NO	DESCRIPTION
C10T	0CE335DK618	C,ELECTROLYTIC 3.3UF STD 50V M
C11T	0CN2210K519	C,TUBULA(HIGH DIELE) 220PF 50V K
C12T	0CN1030F679	C,TUBULA(HIGH DIELE) 0.01MF 16V M
C13T	0CC1500K415	C,CERAMIC(TEMP COMP) 15P 50V J
C14T	0CC1500K415	C,CERAMIC(TEMP COMP) 15P 50V J
C15T	0CN2210K519	C,TUBULA(HIGH DIELE) 220PF 50V K
C16T	0CN1030F679	C,TUBULA(HIGH DIELE) 0.01MF 16V M
C21T	0CE107DD618	C,ELECTROLYTIC 100UF STD 10V M
IC01T	0IT1702090A	IC,TEXAS INSTRUMENT CF70209NW 28D TXT DECODER(CIS
	0IT1702000A	IC,TEXAS INSTRUMENT CF70200NW 28D 8P-EURO TXT *FOR POLAND
IC02T	0IT1723060A	IC,TEXAS INSTRUMENT CF72306 20D TXT DATA SLICER
IC03T	0IKE704200B	IC,KEC KIA7042P 3P 4.2V RESET
IC04T	0IKE780500K	IC,KEC KIA7805PI 3P(TO-220IS) 5V,1A
L01T	0LA0102K119	INDUCTOR 10UH K
L02T	0LA0102K119	INDUCTOR 10UH K
L03T	0LA0331K119	INDUCTOR 3.3UH K
Q01T	0TR319809AA	TRANSISTOR KTC3198-TP-Y (KTC1815)KEC
Q03T	0TR126609AA	TRANSISTOR KTA1266-TP-Y (KTA1015) KEC
R01T	0RD1000F609	R,CARBON FILM 100 1/6W 5
R02T	0RD1000F609	R,CARBON FILM 100 1/6W 5
R03T	0RD1001F609	R,CARBON FILM 1.0K 1/6W 5
R04T	0RD4700F609	R,CARBON FILM 470 1/6W 5
	0RD1001F609	R,CARBON FILM 1.0K 1/6W 5 *FOR POLAND 21"
R05T	0RD4700F609	R,CARBON FILM 470 1/6W 5
	0RD1001F609	R,CARBON FILM 1.0K 1/6W 5 *FOR POLAND 21"
R06T	0RD4700F609	R,CARBON FILM 470 1/6W 5
	0RD1001F609	R,CARBON FILM 1.0K 1/6W 5 *FOR POLAND 21"
R07T	0RD4702F609	R,CARBON FILM 47K 1/6W 5
R10T	0RD1501F609	R,CARBON FILM 1.5K 1/6W 5
R11T	0RD3300F609	R,CARBON FILM 330 1/6W 5
R12T	0RD0681F609	R,CARBON FILM 6.8 1/6W 5
R13T	0RD6801F609	R,CARBON FILM 6.8K 1/6W 5
R15T	0RD1002F609	R,CARBON FILM 10K 1/6W 5
R16T	0RD1002F609	R,CARBON FILM 10K 1/6W 5
R17T	0RD0221H609	R,CARBON FILM 2.2 1/2W 5
R18T	0RD1001F609	R,CARBON FILM 1.0K 1/6W 5
R19T	0RD1503F609	R,CARBON FILM 150K 1/6W 5
R20T	0RD7501F609	R,CARBON FILM 7.5K 1/6W 5
R21T	0RD1000F609	R,CARBON FILM 100 1/6W 5
R22T	0RD1000F609	R,CARBON FILM 100 1/6W 5
X01T	156-A02D	CRYSTAL 13.875000 16PF 30 OHM BULK

MISCELLANEOUS

	132-199D	ANTENNA ROD(W/ADAPTER L=650)
⚠ (20")	153-276A	DY DCAM1-20PLAA
⚠ (21")	153-110F	DY DCAN1*110F-21FSAA
	351-008A	LINK POWER S/W FOR MC-97A CHASSIS
F801	131-098B	FUSE 4A/250V HBC TIME DELAY 5X20
PA01	106-049A	PRE-AMP LIM 9051-4(38.0KHZ),LITEON
PJ201	380-397A	JACK PHONE 4P(AUDIO MONO) PJ
	381-091A	SOCKET SCART JACK 21PIN *FOR POLAND 21"
⚠ P901	381-226D	SOCKET CPT PCS628-01S/LESS BULK(NO5)

LOCA. NO	PART NO	DESCRIPTION
SW01	140-315A	SWITCH TACT VERT
SW02	140-315A	SWITCH TACT VERT
SW03	140-315A	SWITCH TACT VERT
SW04	140-315A	SWITCH TACT VERT
SW05	140-315A	SWITCH TACT VERT
SW06	140-315A	SWITCH TACT VERT
⚠ SW801	140-343A	SWITCH 70063-001(TV5/120A/250V)
⚠ TH801	163-012C	THERMISTOR J502P54E180M220
TU181	6700VMV001A	TUNER 115-B-4101SP
	113-238H	TUNER TUKG4-C07M *FOR POLAND 21"
⚠ T401(20")	154-375H	FBT DNF-FP0008
⚠ (21")	154-375F	FBT DNF-FA2126
VD801	164-003D	VARISTOR SVC 561D-14A

TRANSMITTER PARTS

	0IGS848905A	IC, GOLDSTAR ELECTRON GS8489-05A(GMS30140-R015) 24SO
	303-H73R	COVER BATTERY(W/O PIP)
		COVER BATTERY(W/O PIP)

EXPLODED VIEW PARTS

100 (20")	300-D26A	CABINET ASSY CF-20E60
(21")	300-D40A	CABINET ASSY 21E60
	300-D40D	CABINET ASSY KCF21E60X *FOR POLAND
100-01(20")	441-682A	BUTTON POWER(20E60)
(21")	441-716A	BUTTON POWER(21E60)
100-02	320-075B	SPRING KNOB(CF-29C32)
100-03(20")	454-072A	INDICATOR LED(20E60)
(21")	454-082A	INDICATOR LED(21E60)
100-04(20")	441-683A	BUTTON CONTROL(20E60)
(21")	441-717A	BUTTON CONTROL(21E60)
100-05	120-D45A	SPEAKER 8 OHM 3W/5W 90*55
100-06	343-B40A	SUPPORTER PCB
⚠ 200 (20")	2055-V1221A	CPT A48DAD220X 03L7ND(+0.5)
⚠ (21")	2055-V0674C	CPT A51KPD12XX 14L7KR
⚠	2055-00672L	CPT A51KPD12XX 14N7KR *FOR POLAND
200-01	341-721A	HOLDER D-COIL (FOR AUTO.L=65)
200-02	332-057B	SCREW ASSY,HEXAGON HEAD
⚠ 200-03(20")	150-D02M	COIL DEGAUSSING,CU 21" 60T 150HM
⚠ (21")	150-D02N	COIL DEGAUSSING,CU 21" 60T 120HM
⚠ 200-04	170-851B	LEAD SET ASSY,CPT EARTH(L=640)
⚠	170-A01C	LEAD SET ASSY,CPT EARTH(21") *FOR POLAND
200-05	341-721B	HOLDER D-COIL (FOR AUTO.L=130)
300(20")	6871VMM009M	PWB ASSY MAIN(64A)9FNSCPBRRS
(21")	6871VMM009N	PWB ASSY MAIN (64A)1FNSCPBRRS
	6871VMM047J	PWB ASSY MAIN (64A)1FNHESBREM *FOR POLAND
300-01	341-783A	HOLDER LED (PC-31A)
300-02	0ISA783300A	IC,SANYO LA7833 7SIP V/OUT 2.2A(P-P)
300-03	0IKE781200C	IC,KEC KIA7812PI 3P(TO-220IS) 12V,1A
300-04	0TR249900AA	TRANSISTOR KTD2499 TO-3P(H)IS TOSHIBA
300-05	0ISK570700A	IC,SANKEN STR/S5707(LF:953) 9P SMPS-CNTR

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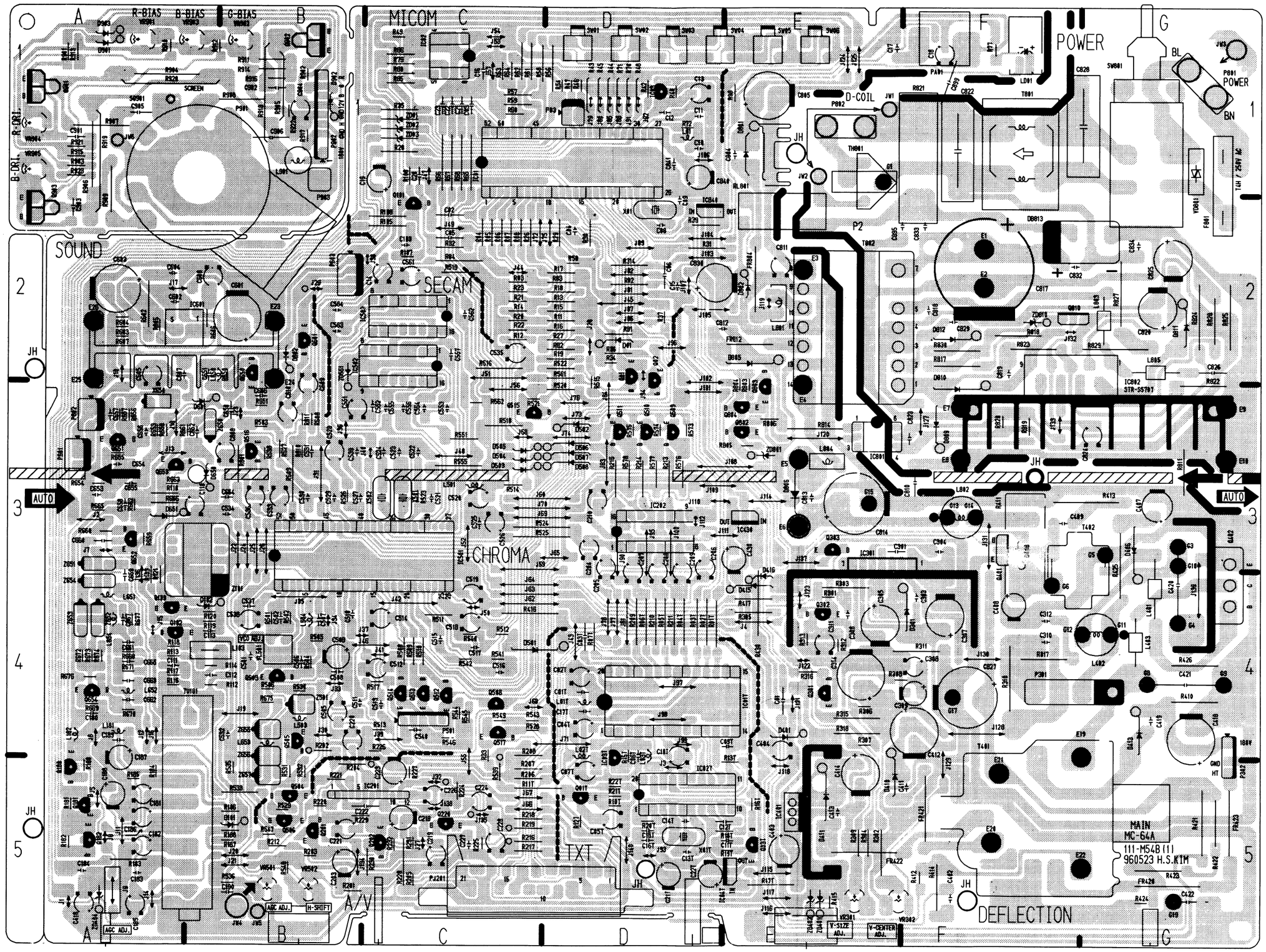
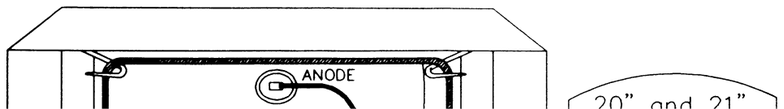
LOCA. NO	PART NO	DESCRIPTION
300-06	0ISG200600A	IC, SGS-THOMSON TDA2006,SOUND
301	303-F62A	COVER TUNER
⚠ 302	174-315H	CORD POWER,VDE L=200(LINETEK)
400(20")	303-M08B	COVER ASSY,BACK(20E60,DPGRR)
(21")	303-M45B	COVER ASSY,BACK(MC41B,CIS)
	303-M45E	COVER ASSY,BACK(KCF21E60X) *FOR POLAND
400-01	1PPF0403116	SCREW,PAN HEAD D4 L16
500	105-229G	TRANSMITTER MC64A W/TXT,G/S

MAIN/CPT PRINTED CIRCUIT BOARD(Component side)



C01	E 4	C508	B 4	C82	
C02	C 2	C509	B 4	C83	
C03	C 1	C510	B 4	C84	
C04	D 2	C511	B 4	C85	
C05	D 2	C512	C 4	C86	
C06	D 2	C513	C 4	C87	
C08	D 2	C514	C 4	C88	
C09	D 2	C515	C 4	C89	
C10	D 1	C516	C 4	C90	
C11	D 1	C517	C 4	C90	
C12	D 1	C518	C 4	C90	
C13	D 1	C519	C 4	C90	
C14	C 2	C520	C 3	C90	
C15	D 2	C521	C 3	C90	
C16	C 1	C522	C 3	C01	
C17	E 1	C523	C 3	C02	
C18	F 1	C524	C 3	C03	
C19	C 1	C525	C 3	C03	
C20	C 2	C526	C 3	C04	
C21	C 1	C527	B 3	C05	
C22	C 1	C528	B 3	C06	
C23	C 1	C529	B 3	C07	
C103	C 2	C530	B 3	C08	
C110	B 3	C531	B 3	C10	
C111	A 4	C532	B 4	C11	
C112	B 4	C533	B 3	C12	
C113	B 4	C534	B 3	C13	
C180	A 4	C535	C 2	C14	
C181	A 5	C536	B 3	C15	
C182	A 5	C537	B 4	C16	
C183	A 5	C538	B 4	C17	
C184	A 5	C539	B 3	C22	
C185	A 5	C540	C 4	C22	
C186	A 5	C551	B 3	D01	
C187	A 5	C552	C 3	D10	
C188	A 5	C553	C 3	D30	
C189	A 4	C554	C 3	D30	
C190	B 5	C555	C 3	D40	
C203	B 5	C556	C 3	D40	
C204	D 3	C557	C 2	D40	
C205	D 4	C561	C 2	D41	
C206	D 4	C562	C 2	D41	
C207	D 4	C563	B 2	D41	
C208	D 4	C564	B 2	D41	
C209	D 4	C601	B 2	D41	
C210	D 3	C602	A 2	D50	
C218	C 5	C603	A 2	D50	
C219	C 5	C604	A 2	D50	
C220	B 4	C605	A 3	D50	
C221	B 5	C606	B 2	D50	
C222	B 5	C607	A 3	D50	
C223	C 5	C608	B 3	D50	
C224	C 5	C609	B 3	D50	
C226	C 5	C610	B 3	D65	
C227	C 5	C650	B 3	D65	
C228	C 5	C651	B 3	D65	
C301	E 3	C652	B 3	D65	
C303	F 4	C653	A 3	D80	
C304	F 3	C654	A 3	D80	
C305	E 4	C655	A 3	D80	
C306	E 4	C656	A 3	D80	
C307	F 4	C657	A 3	D81	
C308	F 4	C658	A 3	D81	
C309	F 4	C659	A 4	D81	
C310	F 4	C660	A 3	D81	
C311	E 4	C661	A 4	D90	
C312	F 4	C662	A 4	D90	
C314	E 4	C663	A 4	D90	
C402	F 5	C664	B 3	D88	
C403	E 5	C665	A 4	E1	
C404	E 4	C666	B 3	E2	
C407	G 3	C667	A 4	E3	
C408	F 4	C804	E 1	E4	
C409	F 3	C805	E 1	E5	
C411	F 5	C810	F 3	E6	
C412	F 4	C811	E 2	E7	
C413	E 5	C812	D 2	E8	
C414	E 5	C813	E 3	E9	
C416	A 5	C814	E 3	E10	
C418	G 4	C817	F 2	E19	
C419	G 4	C818	F 2	E20	
C420	G 3	C819	F 3	E21	
C421	G 4	C820	G 2	E22	
C422	G 5	C822	F 2	E23	
C430	E 4	C823	F 3	E24	
C501	B 4	C824	G 3	E25	
C502	B 4	C825	G 2	E26	
C505	B 4	C826	G 2	F80	
C506	B 4	C827	F 4	F80	
C507	B 4	C828	G 1	FR4	

WIRING DIAGRAM



20" and 21"

TROUBLESH

DEAD SET (NO RASTER/NO SOUND)

Check +B vo

112V(or 118V)

Check the heater elements of CPT are lighting or not

No

Check/Replace FR423

Yes

Check the voltage at C430(+)

0.1V

NO PICTURE/NO SOUND

(RASTER OK)

NO SOUND(PICTURE OK)

COMPONENT LOCATION GUIDE

C01 E 4
C02 C 2
C03 C 1
C04 D 2
C05 C 2
C06 D 2
C08 D 2
C09 D 2
C10 D 1
C11 D 1
C12 D 1
C13 D 1
C14 C 2
C15 D 2
C16 C 1
C17 E 1
C18 F 1
C19 C 1
C20 C 2
C21 C 1
C22 C 1
C23 C 1
C103 C 2
C110 B 3
C111 A 4
C112 B 4
C113 B 4
C180 A 4
C181 A 5
C182 A 5
C183 A 5
C184 A 5
C185 A 5
C186 A 5
C187 A 5
C188 A 5
C189 A 4
C190 B 5
C203 B 5
C204 D 3
C205 D 4
C206 D 4
C207 D 4
C208 D 4
C209 D 4
C210 D 3
C218 C 5
C219 C 5
C220 B 4
C221 B 5
C222 B 5
C223 C 5
C224 C 5
C226 C 5
C227 C 5
C228 C 5
C301 E 3
C303 F 4
C304 F 3
C305 E 4
C306 E 4
C307 F 4
C308 F 4
C309 F 4
C310 F 4
C311 E 4
C312 F 4
C314 E 4
C402 F 5
C403 E 5
C404 E 4
C407 G 3
C408 F 4
C409 F 3
C411 F 5
C412 F 4
C413 E 5
C414 E 5
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C418 G 4
C419 G 4
C420 G 3
C421 G 4
C422 E 5
C430 E 4
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C502 B 4
C505 B 4
C506 B 4
C507 B 4

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C667 A 4
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C813 E 3
C814 E 3
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C818 F 2
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C825 G 2
C826 G 2
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C841 D 1
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C906 B 1
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C22T D 5
D01 D 2
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D102 B 4
D301 F 4
D401 E 4
D406 G 4
D408 F 4
D410 E 4
D411 E 5
D413 G 4
D415 E 4
D416 E 4
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D506 D 3
D507 D 3
D508 D 3
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D805 E 2
D806 E 3
D809 F 3
D810 F 3
D811 G 2
D812 F 2
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D902 B 1
D903 A 1
DB813 F 2
E1 F 2
E2 F 2
E3 E 2
E4 E 3
E5 E 3
E6 E 3
E7 F 3
E8 F 3
E9 G 3
E10 G 3
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E20 F 5
E21 F 5
E22 G 5
E23 B 2
E24 B 3
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E26 A 2
F801 G 1
F802 G 2
FR420 G 5

FR421 F 5
FR422 E 5
FR423 G 5
FR804 E 2
FR812 D 2
G1 E 2
G3 G 3
G4 G 4
G5 G 3
G6 F 4
G8 G 4
G9 G 4
G10 G 4
G11 G 4
G12 G 4
G13 F 3
G14 F 3
G15 E 3
G17 F 4
G19 G 5
IC01 C 2
IC02 C 1
IC03 D 1
IC201 B 5
IC202 D 3
IC301 E 4
IC401 E 5
IC430 E 3
IC501 B 4
IC502 C 2
IC503 C 2
IC601 A 2
IC801 E 3
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IC840 D 2
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IC02T D 5
IC03T D 4
IC04T E 5
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J3 D 5
J4 E 4
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J6 A 4
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L02T D 5
L03T D 5
LD01 F 1
P03 D 1
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P302 G 4
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P603 B 2
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P802 E 1
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P902 B 1
P903 B 2
PA01 F 1
PJ201 C 5
Q01 D 2
Q02 D 2
Q101 C 2
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Q402 G 4
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Q504 B 5
Q505 B 4
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R39 D 2
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R43 D 1
R44 D 1
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R911 B 1

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R21T D 5
R22T D 5
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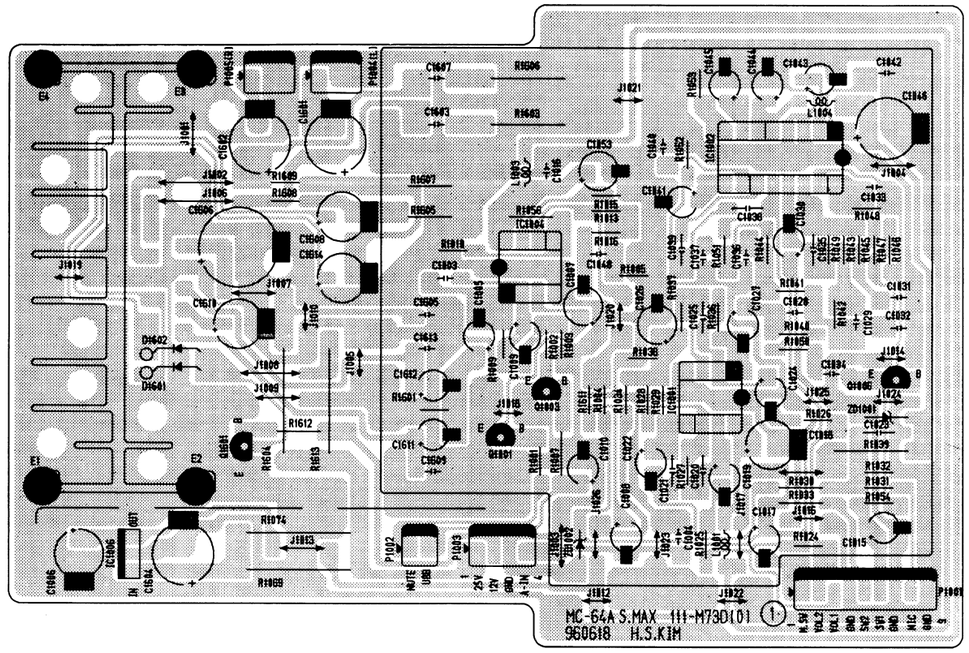
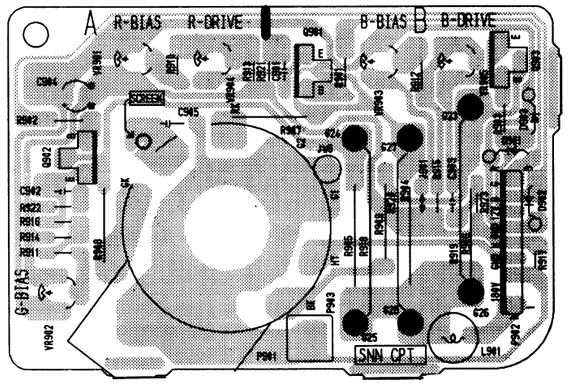
SW01 D 1
SW02 D 1
SW03 D 1
SW04 E 1
SW05 E 1
SW06 E 1
SW801 G 1
T401 F 5
T402 F 4
T801 F 1
T802 E 3
TH801 E 2
TU181 B 4
VD801 G 2
VL501 B 4
VR301 E 5
VR302 E 5
VR501 B 5
VR502 B 5
VR901 A 1
VR902 B 1
VR903 A 1
VR904 A 1
VR905 A 1
X01 D 2
X501 C 3
X502 C 3
X650 A 3
X01T D 5
Z101 B 4
Z501 B 4
Z650 B 3
Z651 A 4
Z652 A 4
Z653 A 4
Z654 A 4
Z655 B 4
Z656 B 5
Z657 B 5
ZD01 C 1
ZD02 C 1
ZD03 C 1
ZD401 E 5
ZD402 E 5
ZD404 A 5
ZD551 B 3
ZD801 E 3
ZD810 F 2

SOUND(KARAOKE) AMP PRINTED CIRCUIT BOARD

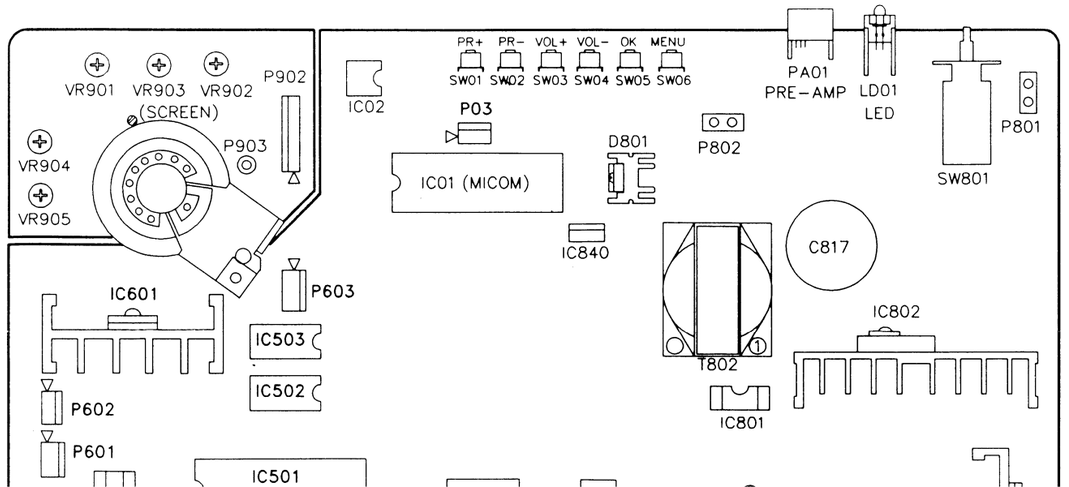
(Component side)



CPT Board(14" SNN CPT)

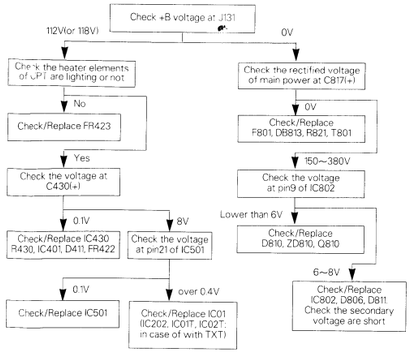


ALIGNMENT/TEST POINT LOCATION GUIDE

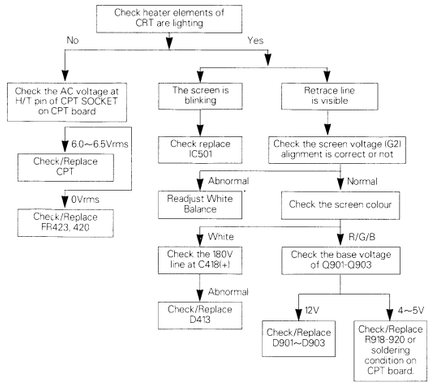


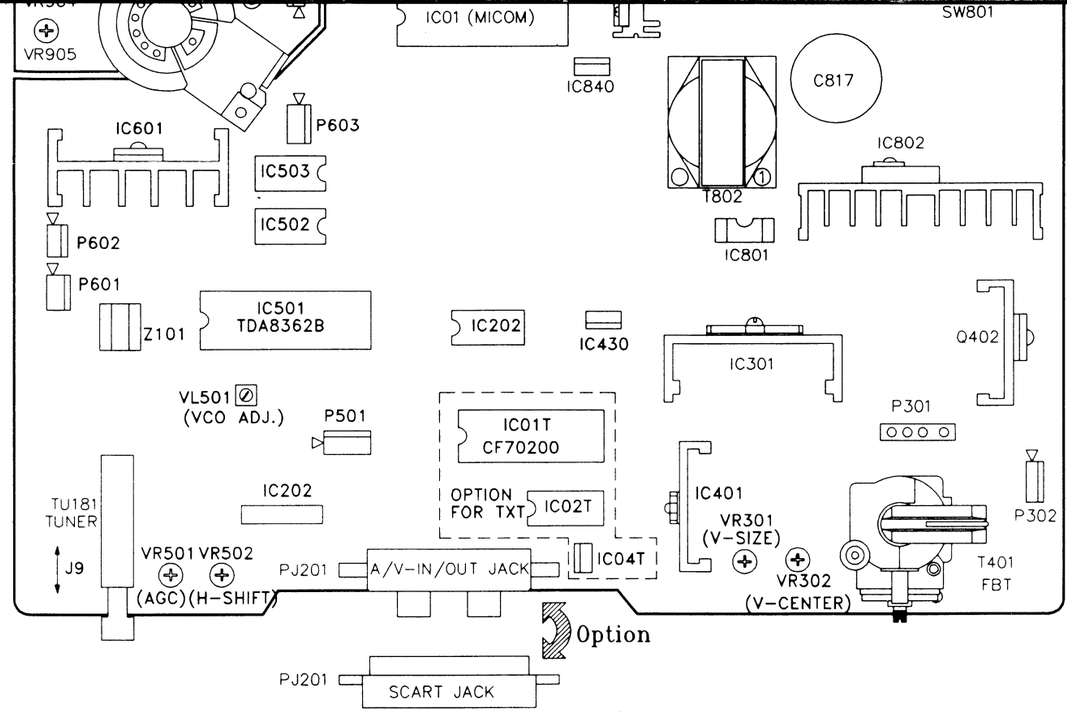
TROUBLESHOOTING GUIDE

DEAD SET (NO RASTER/NO SOUND)

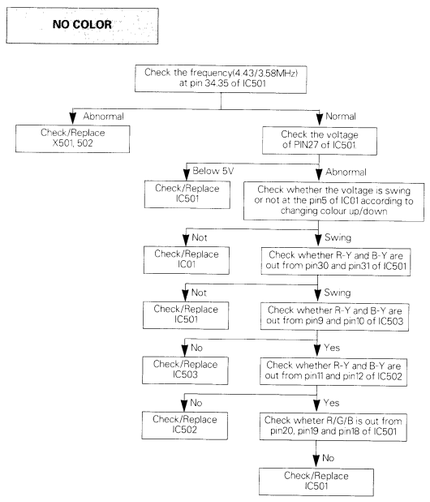


NO RASTER(SOUND OK)

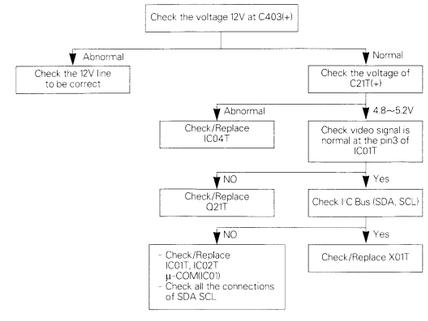




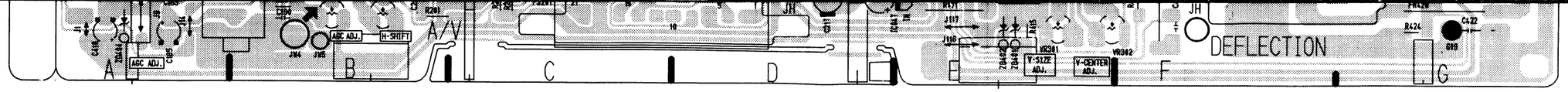
NO COLOR


Check the frequency(4.43/3.58MHz) at pin 34,35 of IC501
Abnormal
Normal
Check/Replace X501, 502
Check the voltage of PIN27 of IC501
Below 5V
Abnormal
Check/Replace IC501
Check whether the voltage is swing or not at the pin5 of IC01 according to changing colour up/down
Not
Swing
Check/Replace IC01
Check whether R-Y and B-Y are out from pin30 and pin31 of IC501
Not
Swing
Check/Replace IC501
Check whether R-Y and B-Y are out from pin9 and pin10 of IC503
No
Yes
Check/Replace IC503
Check whether R-Y and B-Y are out from pin11 and pin12 of IC502
No
Yes
Check/Replace IC502
Check wheter R/G/B is out from pin20, pin19 and pin18 of IC501
No
Check/Replace IC501

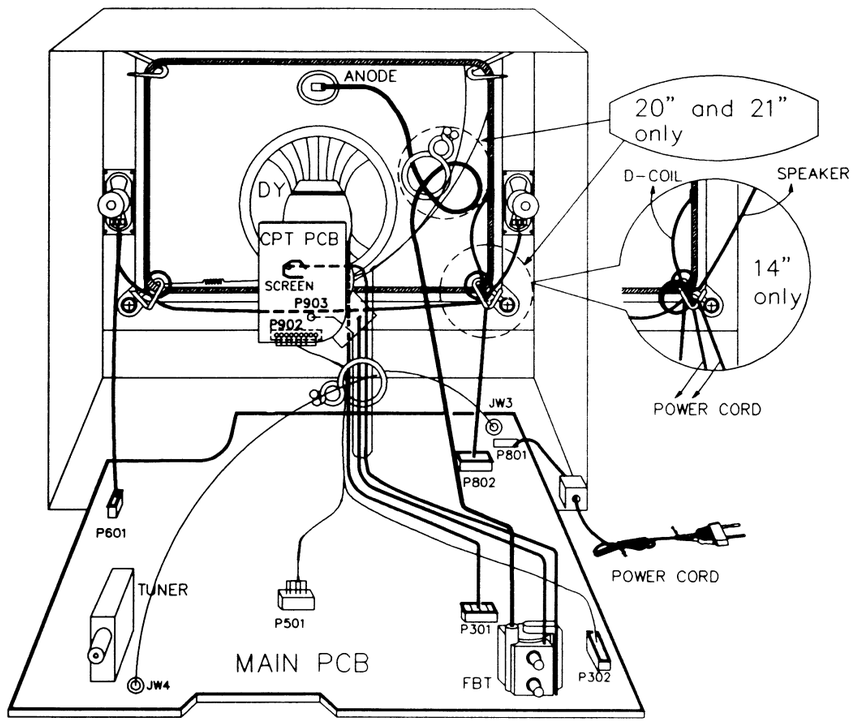
NO TELETEXT



BLOCK DIAGRAM



WIRING DIAGRAM



NO PICTURE/NO SOUND

(RASTER OK)

Check the voltage of TUNER M8(12V)

11.8~12.2V

- Check/Replace Tuner
- Check the tuning condition
- Check/Replace FR422, D411, IC401

Check the 33V at C416(+)

0V

Check/Replace R421, ZD404

NO SOUND(PICTURE OK)

Check the voltage(SMPS 25V) at pin5 of IC601

Abnormal

Check/Replace of FR804, D804

Check the soldering state around IC601

Abnormal

Check/Replace IC01

0V

Check/Replace IC430

Check/Replace IC601

Normal(20~27V)

Check the voltage at pin16 of IC501

10~12V

Check/Replace Q508 (TV/AV, TXT switch)

Normal

Check the voltage at pin 10 of IC501

7~9V

Check the voltage at pin 5 of IC501

Check whether the voltage is swing or not at pin3 of IC01 when turning the volume up

Check/Replce IC01

DEAD SET (NO RASTER/NO SOUND)

Check +B vo

112V(or 118V)

Check the heater elements of CPT are lighting or not

No

Check/Replace FR423

Yes

Check the voltage at C430(+)

0.1V

Check/Replace IC430 R430, IC401, D411, FR422

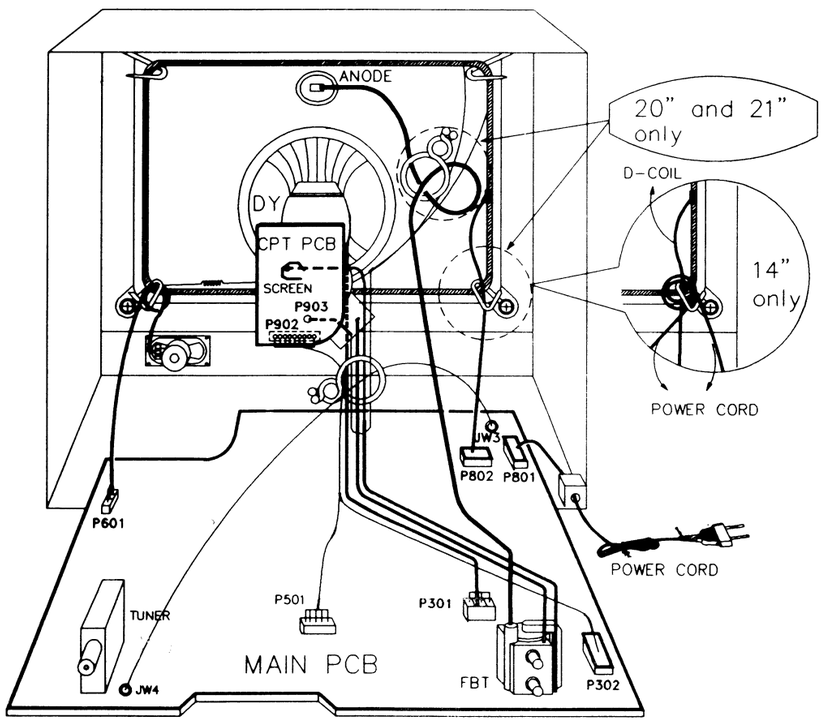
Check the v at pin21 of

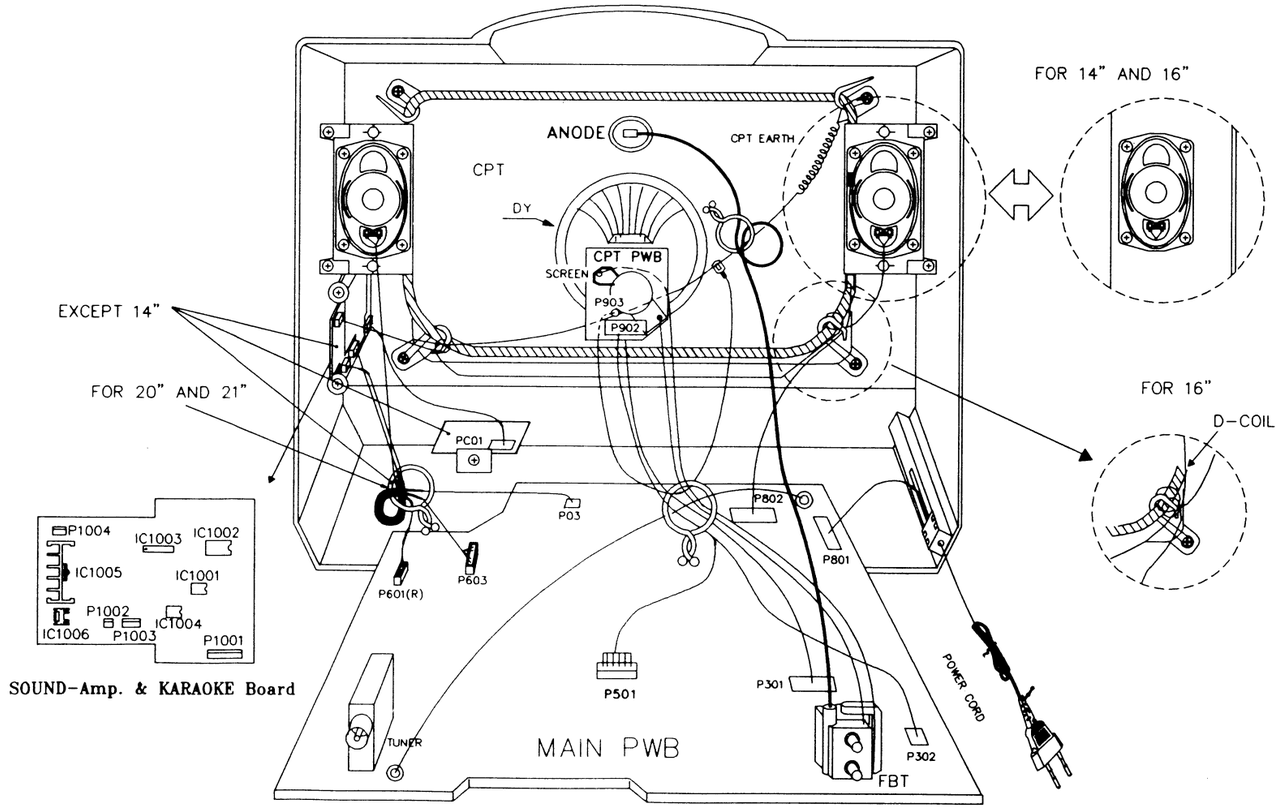
0.1V

Check/Replace IC501

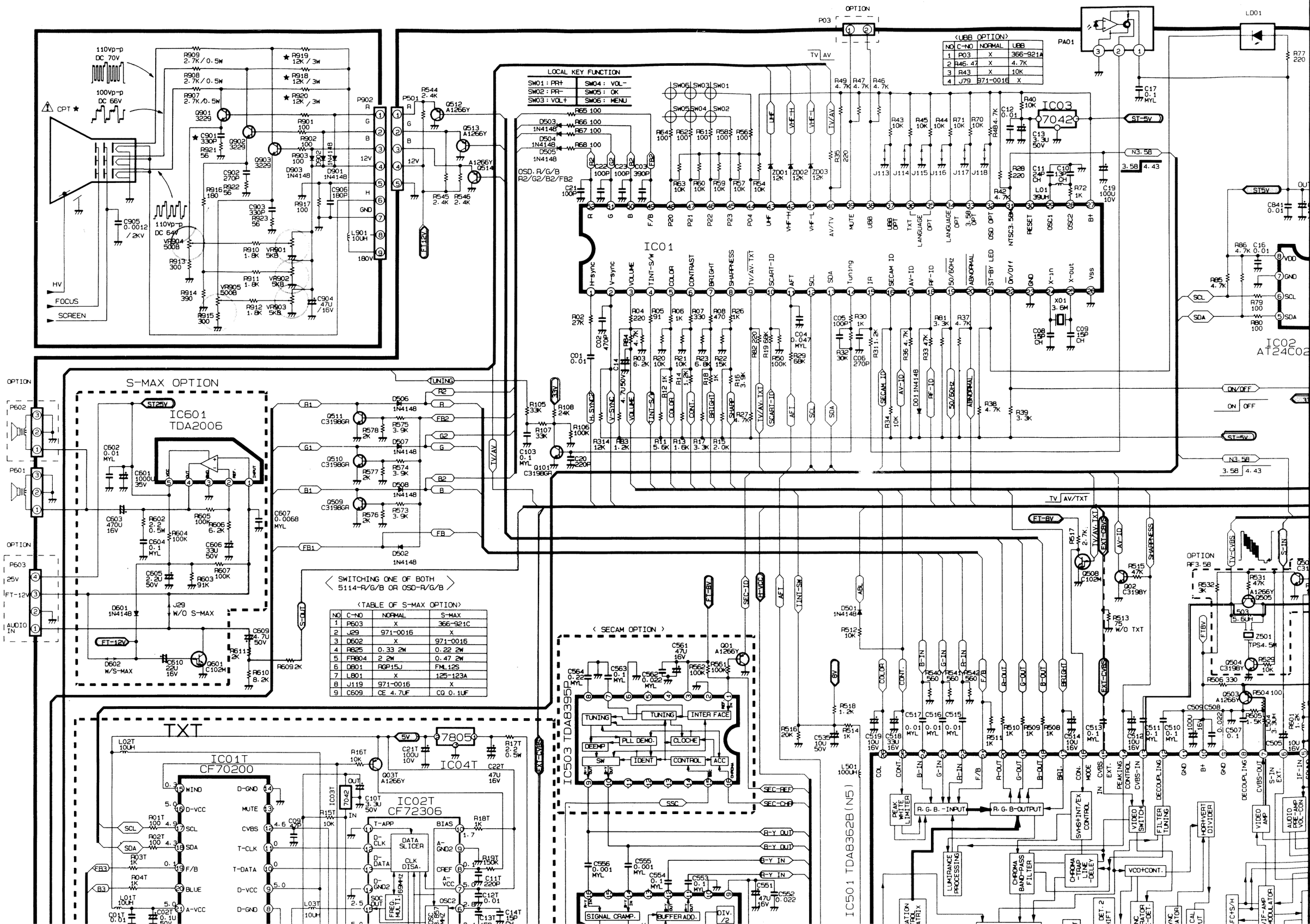
Check/Re (IC202, IC in case of

NOTE : The features may be different in accordance with the tool.





Service Sheet of MC-64A chassis



chassis

P/N : 484-935A-S

DATE : JUN. 20, 1996

NOTICE

Since this is a basic schematic diagram.

the value of components and some partial connection are subject to be changed for improvement without notice.

The components marked ⚠ conform VDE or IEC guidelines and essential for safe operation of the TV receiver. while those marked ⚠ are required for correct operation. Use specified parts only when replacing.

VALUE OF RESISTER. CAPACITOR AND INDUCTOR

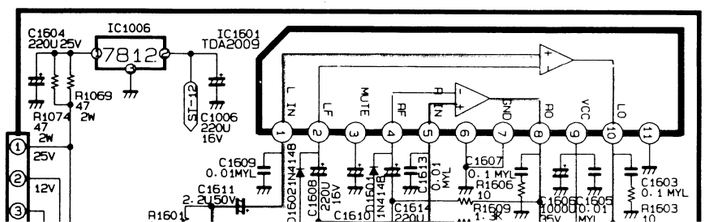
1. Resistance is shown in ohm. K=1.000 M=1.000.000.
2. Unless otherwise noted in schematic. all capacitor values less than 1 are expressed in mfd and the values more than 1 in pF
3. Unless otherwise noted in schematic. all inductor values less than 1 are expressed in uH. and the values less than 1 in H.

OBSERVATION OF VOLTAGE AND WAVEFORMS

1. Voltages read with VTVM from point to ground line voltages 180 ~ 270 volts. color bar signal.
2. Voltages reading may vary +/- 20 %.
3. The schematic shown is representative only.
4. All waveforms ateken using a wide band oscilloscope and a low capacity prove
5. Check FINE TUNING. AGC. BRIGHTNESS. CONTRAST and COLOR controls for best picture. make sure that BRIGHTNESS and COLOR controls are in mid position and CONTRAST controls is almost in maximum position
6. Waveforms are taken using a standard color signal.

TABLE OF INCH CONVERSION (★ : changing parts)

CIRCUIT NO.	INCH				REMARK
	14"	16"	19"	21"	
T401	154-064P	154-064P	154-375H	154-375F	FBT
L402	150-L01W	150-159D	150-L02C	150-L02C	LINEARITY COIL
FR420	3	1.2	1.4	1.2	RESI. FUSI. 2W
R308	680	910	680	1.1K	RESI. RD 1/6W
R311	2.2	2.2	2.2	2.2	RESI. RD 0.5W
R423	100K	100K	82K	82K	RESI. RD 0.5W
R422	100K	91K	91K	75K	RESI. RD 0.5W
C420	0.47	0.72	0.36	0.43	CAPA. MPP 200V
C421	6200P	7700P	8600P	8200P	CAPA. MPP 1.6KV
R830	15	15	15	15	RESI. RS 0.5W
T802	151-B06Q	151-B06Q	151-B06Q	151-B06L	TRANS SMPS M/L
T802					TRANS SMPS S.MAX
P901	381-100C	381-226D	381-226D	381-226D	SOCKET CPT
PCB	111-M54C	111-M54B	111-M54B	111-M54B	PCB MAIN
R304	82	82	82	390	RESI.RD
FR423	TIN-WIRE	TIN-WIRE	0.47	0.47	RESI RF 1W
R919	10K	10K	12K	12K	RESI. RS 3W
R920	10K	10K	12K	12K	RESI. RS
R921	10K	10K	12K	12K	RESI. RS
C901	270PF	330PF	330PF	330PF	CN 50V



R920	10K	10K	12K	12K	RESI. RS
R921	10K	10K	12K	12K	RESI. RS
C901	270PF	330PF	330PF	330PF	CN 50V

TABLE OF A/V OPTION

NO	C-NO	W/PHONO	W/SCART
1	R226	1.5K 1/6W	1.2K 1/6W
2	J32	TIN WIRE	X
3	J135	X	TIN WIRE
4	R216.219	X	470 1/6W
5	R202	X	330 1/6W
6	R204	330 1/6W	X
7	R224	1.5K 1/6W	2K 1/6W

9. SYSTEM CONTROL(A/V)

S-ID(16)	v-FREQ.	SYSTEM	3.58-SW(31)	50/60(19)	TINT-SW(4)	TINT-CONTROL
H	50	SECAM	H	H	H	X
L	50	PAL	H	H	H	X
L	60	N3.58	L	L	1 - 3.5	0
L	60	N4.43	H	L	1 - 3.5	0

10. AV-ID/SHARPNESS

PICTURE	TDA8362(14)	Q02	u-COM(17)	REMARKS
NO SIGNAL	L	OFF	H	AV DISPLAY ON SCREEN
SIGNAL	1.5 - 4(V)	ON	L	VOLT IS CHANGED BY S-CON

TEM CONTROL(FORCED)

-SW(31)	50/60(19)	TINT SW(4)	TINT CONTROL
	H	H	X
	H	H	X
	L	1 - 3.5	0
	L	1 - 3.5	0

ADJUSTMENT

POWER

WAVEFORM

SIF/SOUND

EXT. SOUND

CVBS/VIDEO

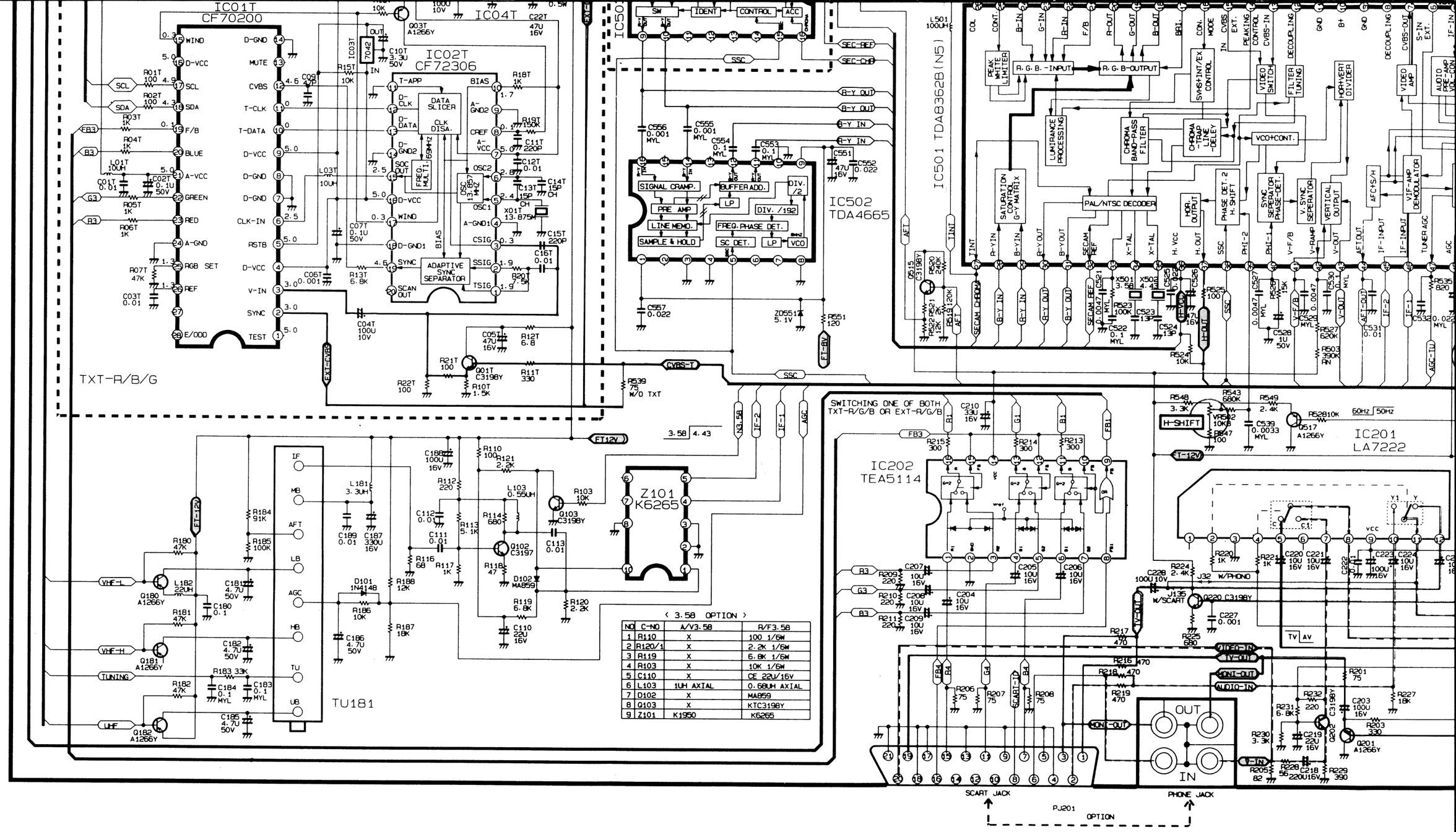
EXT. VIDEO

HORIZONTAL

S-AMP & KARAOKE (OPTION)

KARAOKE-CONTROL (OPTION)

TO P902



1. RF/AV/TXT SWITCHING

MODE	SUB MODE	LA7222-2.4	B362-16	u-COM-40	u-COM-9	VIDEO	AUDIO
RF	RF(TV)	H	L	H	H	RF	TV-A
RF	TXT	H	H	H	L	RF-SYNC	TV-A
AV	AV-VIDEO	L	H	L	L	AV	AV-A
AV	AV-TXT	L	H	L	L	AV-SYNC	AV-A

2. SAW FILTER SWITCHING

MODE	D102	SAW FILTER 1 AND 10	Q103	3.58 | 4.43
PAL	OFF	NOT CONNECT	ON	
NTSC	ON	CONNECT	OFF	

3. SOUND TRAP SWITCHING

SYSTEM	u-COM(31)	Q506	Q504	Q505	Z501
PAL	H	ON	OFF	ON	OFF
NTSC	L	OFF	ON	OFF	ON

4. SOUND FILTER SWITCHING

SYSTEM	u-COM(31)	Q652	Q653	D651	D650	SOUND-IF
PAL	H	ON	OFF	OFF	ON	5.5/6.0/6.5
NTSC	L	OFF	ON	ON	OFF	4.5

5. H-SHIFT

V-FREQ.	u-COM(19)	Q517	PHI-2(V)	H-SHIFT	SYSTEM
60Hz	L	ON	↓	RIGHT	NTSC
50Hz	H	OFF	↑	LEFT	P/S

6. V-CENTER SHIFT

V-FREQ.	u-COM(19)	Q301	Iv	V-CENTER
60Hz	L	OFF		DOWN
50Hz	H	ON	↑	UP

< 3.58 OPTION >

NO	C-NO	A/V3.58	R/F3.58
1	R110	X	100 1/6W
2	R120/1	X	2.2K 1/6W
3	R119	X	6.8K 1/6W
4	R103	X	10K 1/6W
5	C110	X	CE 22U/16V
6	L103	1UH AXIAL	0.68UH AXIAL
7	D102	X	MA859
8	Q103	X	KTC3198Y
9	Z101	K1950	K6265

7. SYSTEM CONTROL(AUTO)

S-ID(16)	V-FREQ.	SYSTEM	3.58-SW(31)	50/60(19)	TINT(4)	TINT CONTROL
H	50Hz	SECAM	H	H	L	X
L	50Hz	PAL	H	H	H	X
L	60Hz	N4.43	L	L	H	0
L	60Hz	N3.58	L	L	H	0

8. SYSTEM CONTROL(FORCED)

SYSTEM	3.58-SW(31)	50/60(19)	TINT SW(4)	TINT CONTROL
PAL	H	H	H	X
SECAM	H	H	H	X
N4.43	L	L	1 - 3.5	0
N3.58	H	L	1 - 3.5	0